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A STUDY OF AEC PROCEDURES AND ORGANIZATION IN THE LICENSING OF REACTOR FACILITIES

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STATEMENT

This document is a committee study prepared by the committee's staff and is not a committee report. It does not contain specific legislative recommendations, and is intended as a basis for further analysis and consideration by the members of the Joint Committee and the Congress.

FOREWORD

Last summer, Senator Anderson, my predecessor as chairman of the Joint Committee on Atomic Energy, directed the Joint Committee staff to undertake a study of AEC reactor licensing procedures and organization. Senator Anderson indicated that the Joint Committee might consider proposals to amend the Atomic Energy Act of 1954 in three important respects as to the processing of reactor license applications: (1) to require a public hearing on each application; (2) to require public availability of hazards reports on each proposed reactor; and, (3) to require a sharper separation of the licensing function within the AEC organization.

The resulting study by the Joint Committee staff discusses, in the Introduction, the special characteristics of the AEC licensing program, the AEC's responsibility for reactor safety, the developments in this field since the 1954 act, and some policy factors to be considered. Part I next summarizes present AEC licensing procedures and organization, and parts II, III, and IV then proceed to consider the three specific questions of public hearings, public reports on reactor safety, and a sharper organizational split of the licensing function. Finally, the appendix contains materials assembled by the staff which should assist the Joint Committee in considering these complex and difficult problems.

In conducting this study and in writing the report, the Joint Committee staff was assisted by two consultants: Prof. J. Forrester Davison of the George Washington University School of Law, and Prof. John G. Palfrey of Columbia University School of Law. A staff member and the consultants, in order to evaluate the licensing procedures and organizations of other Federal agencies, held a series of meetings with staff personnel of the Federal Communications Commission, Federal Power Commission, Civil Aeronautics Administration, Civil Aeronautics Board, Maritime Administration, Maritime Board, Federal Food and Drug Administration, and the Securities and Exchange Commission.

In making the study, the Joint Committee staff was in constant contact and consultation with the AEC staff, and requested and obtained a number of specially prepared reports, several of which have been reprinted in the appendix. The discussions and meetings between the Joint Committee staff and the AEC staff were held and proceeded in a spirit of mutual cooperation.

After the start of the study by the Joint Committee, and in the course of its conduct, the AEC changed its procedures significantly in connection with the publishing of reports on reactor safety and announcing the availability of hearings in advance of action on construction permits. The AEC has also indicated to the Joint Committee that it is considering some type of internal separation of the licensing functions. The study therefore presents information and analysis to assist the Joint Committee, the Congress, the AEC, and the public, in considering whether the recent procedural changes are sufficient or

whether further changes in the AEC reactor licensing procedures or organization are necessary or desirable in the public interest.

It should be understood that this study is not a committee report and that it does not contain specific legislative recommendations. The considerations and alternatives discussed in the study do not necessarily represent the views of the committee or its individual members.

CARL T. DURHAM,
Chairman, Joint Committee on Atomic Energy.

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[1] The table of appendixes is at p. 49.

AEC LICENSING OF FACILITIES

A study of AEC procedures and organization in the licensing of reactor facilities, with particular reference to public hearings on applications, public availability of reports on reactor safety, and the separation of the AEC licensing function

INTRODUCTION

In amending the Atomic Energy Act [1] in 1954, Congress decided that widespread participation by private industry in the construction, ownership and operation of nuclear reactors should be permitted and encouraged. The act established a framework within which private industry could apply for and obtain from the Atomic Energy Commission construction permits and facility licenses to construct and operate facilities, including reactors.[2] Pursuant to the act, the Commission issued regulations and developed an organization and procedures for the licensing of facilities.[3] By August 1956, the AEC had processed a number of applications and granted several construction permits, including three for large-scale power reactors.[4]

In order that the Joint Committee on Atomic Energy might assess the procedures used by the AEC in passing upon facility license applications, Senator Clinton P. Anderson, chairman of the Joint Committee during the 84th Congress, directed the committee staff to make an investigation and study, as indicated by the following letter from Senator Anderson to Mr. Strauss dated August 9, 1956:

> CONGRESS OF THE UNITED STATES,
> JOINT COMMITTEE ON ATOMIC ENERGY,
> *August 9, 1956.*
>
> DEAR MR. STRAUSS: I have directed the staff of the Joint Committee on Atomic Energy to investigate selected aspects of civilian application activities during the period until January 1, 1957.
>
> One aspect which has been determined to be of interest is the procedure followed by the Commission in considering applications for construction permits and licenses for reactors. It is possible that we will desire to hold hearings on this subject in the fall, perhaps as early as September 1956.
>
> We are particularly interested in three problems which may require legislative action. First, it has been suggested that the act should require that public hearings be held before the grant or denial of a construction permit or license by the Commission. Second, it has been suggested that the act should require that all reports on reactor safety be made

[1] Public Law 703, 83d Cong., 2d sess., 68 Stat. 919 (1954), 42 U. S. C. A., sections 2011-2281.
[2] For pertinent excerpts from the act, see appendix 1.
[3] For pertinent excerpts from AEC Regulations, see appendix 3.
[4] For statistics on applications received, and construction permits and facility licenses issued in 1955 and 1956, see note 14, p. 7, *infra*.

public as soon as completed. Lastly, it has been suggested that the Atomic Energy Act should be amended to separate the quasi-judicial from the developmental and promotional functions of the Commission.

I am, therefore, directing the staff of the Joint Committee to make a study of this subject, including the procedural steps followed by the Commission on selected applications to date. I am sure that the staff will enjoy the usual complete cooperation of Commission personnel so that all essential background information can be gathered for constructive and effective consideration by the Joint Committee of the problems involved.

Sincerely yours,

CLINTON P. ANDERSON, *Chairman.*

On August 20, the AEC General Manager replied that the AEC staff would cooperate with the committee staff in conducting the study.

The committee staff undertook its investigation and study immediately, commencing in August 1956. No hearings were held by the committee on this subject during 1956.

This report will consist of an Introduction and four parts: The Introduction describes the special characteristics of the AEC licensing program under the 1954 act, including the responsibilities of the AEC in the field of reactor safety, and outlines developments since 1954 that led to this study. Part I summarizes the present procedures and organization followed by the Commission in the licensing of reactor facilities. Parts II, III, and IV then proceed to consider the three problems raised by Senator Anderson's letter quoted above.

FOCUS OF THE STUDY

The focus of this study is on the Atomic Energy Commission's procedures and organization in issuing construction permits and licenses to operate developmental reactor facilities—a comparatively narrow but highly significant area of the Commission's overall responsibilities for atomic energy development. The relationship of this licensing process to other AEC operations is important because the major questions considered below are to a considerable extent the product of the interrelated nature of the Commission's responsibilities under the act.

The licensing of reactor facilities is one element of the Commission's regulatory functions under the act, which also include a comprehensive licensing structure, not here considered, for the possession and use of nuclear fuels or materials.[5] The regulatory function of the Commission, in turn, is just one element of the Commission's responsibility in the development of atomic energy for industrial and other nonmilitary purposes, including a broad Government-directed program of

[5] The act defines and establishes licensing requirements for 3 different types of nuclear materials: (1) source material (natural uranium, thorium, or any other material so determined by the AEC), for which a license is required for possession or transfer after removal from its place of deposit in nature; (2) special nuclear material (plutonium, uranium enriched in isotope 233 or 235, and other materials identified by the AEC as capable of releasing substantial quantities of atomic energy), all owned by the United States, and for which a license is required for possession or use, subject to reasonable charges by AEC, unless waived; (3) byproduct material (any radioactive material, except special nuclear material, yielded in or made radioactive by exposure to radiation incident to the process of producing or utilizing special nuclear material—notably radioisotopes) which may either be owned subject to AEC regulation, or for which a license is required for possession, use, or transfer. The act also requires that operator licenses be obtained by any individual who manipulates the controls of a facility. Supplementing these statutory requirements, the AEC has issued regulations providing for the control and regulation of materials and operators.

reactor research and development. Finally, nonmilitary development is part of the Commission's overall responsibility to develop atomic energy, including its primary role in the military application of atomic energy.[6]

Thus licensing is a comparative newcomer among the Commission's many other functions which include procurement of raw materials, production of special nuclear materials, manufacture of weapons, and research and development, including use of radioisotopes and reactor development. These other functions have been part of the Commission's program since 1946, and have been carried out largely by means of contracts between AEC and private companies and universities who performed the work, pursuant to AEC direction and supervision.

The Commission's regulatory role in licensing facilities, while it occupies a smaller part of the Commission's total operation than is the case with most other regulatory commissions, thus is nevertheless closely linked with the AEC's nonregulatory responsibilities.

This study considers the AEC licensing procedures and organization both in terms of the immediate present, when questions of reactor safety are of paramount importance, and also in terms of the more long-range future, when questions of impartial decisions on competing private rights may be of greater prominence.

SPECIAL CHARACTERISTICS OF AEC LICENSING PROGRAM UNDER THE ACT

A. Relationship to Government-directed program

The AEC program of licensing private atomic activities resulted from a congressional decision in 1954 to authorize private ownership and operation of reactor facilities subject to Government regulation. The basis for this authorization was the determination that increased private industry participation would help hasten the day of economic atomic power.

At the same time, it was believed that the efforts of free enterprise using its own resources and money, were not "by themselves adequate to achieve the speediest possible attack on the goal of peacetime power." [7] Thus, along with the authorization of private development, the act provided for the continuation and enlargement of the Government-directed program of reactor development, with the aim of encouraging "flourishing research and development programs under both Government and private auspices." [8] The Government program, as in the past, was carried out by contracts between the Government and private industrial concerns.

Therefore, the private licensing program was established as an instrument of a specific governmental purpose, devoted to much the same type of undertaking as that of the parallel Government-directed program. One result was that many private companies who had long participated as Government contractors now became active also as private licensees and suppliers.

The creation of parallel programs to accelerate atomic power development has placed a coordinating responsibility on the AEC. On occasion, the Commission has been compelled to decide to what

[6] For discussions concerning the interrelationships of the various responsibilities and functions of the AEC, see Palfrey, Atomic Energy: A New Experiment in Government-Industry Relations, 56 Col. L. Rev. 367 (1956); and Northrop, The Changing Role of the Atomic Energy Commission in Atomic Power Development, 21 L. & C. P. 38 (1956).

[7] H. Rept. No. 2181 accompanying H. R. 9757 and S. Rept. No. 1699 accompanying S. 3690, 83d Cong., 2d sess., (the bills of the Joint Committee to amend the act in 1954) both at p. 9.

[8] Idem.

extent emphasis should be placed on the Government-directed or privately regulated undertaking, or both, to secure desired progress in reactor development.

B. Government promotion and assistance

To the extent that the AEC placed its reliance on the private program, proposals for construction of power reactors would be requested. In such a situation the AEC would be acting in the dual capacity of encouraging as well as regulating private activity.

In addition, the Commission assumed the further role of lending assistance to private activity. Because the starting point had been a Government monopoly, private companies, newly authorized to enter the field, were unusually dependent upon the Government for information, assistance, and services—a fact that was reflected by numerous provisions in the 1954 act. The result was, however, that considerations of Government promotion and assistance were more closely interrelated with those of regulation than is the case in most other regulatory agencies.

C. Reactor hazards and AEC responsibility

In authorizing a program of private development in 1954, Congress concluded that such activity must be made subject to stringent Government regulation in the interest of the common defense and security and the public health and safety.

The special problem of safety in the atomic field is the consequence of the hazards created by potentially harmful radiations attendant upon atomic energy operations. These hazards arise at many stages in the chain of production and utilization of special nuclear materials, including fuel fabrication, reactor operation, fuel reprocessing and the disposal of radioactive wastes. In power development activities, the hazard of principal concern relates to the operation of nuclear reactors and associated facilities, and the possibility of widespread damage from a reactor accident involving the release of substantial quantities of radioactive material.

The extent of damage that might be caused by a reactor catastrophe is difficult to assess. In a recent report by the AEC to the Joint Committee it was stated:

> For the 3 types of assumed accidents, the theoretical estimates indicated that personal damage might range from a lower limit of none injured or killed to an upper limit, in the worst case, of about 3,400 killed and about 43,000 injured.
>
> Theoretical property damages ranged from a lower limit of about one-half million dollars to an upper limit in the worst case of about $7 billion. This latter figure is largely due to assumed contamination of land with fission products.
>
> Under adverse combinations of the conditions considered, it was estimated that people could be killed at distances up to 15 miles, and injured at distances of about 45 miles. Land contamination could extend for greater distances.
>
> In the large majority of theoretical reactor accidents considered, the total assumed losses would not exceed a few hundred million dollars.

Although the probability of a major reactor accident was estimated as exceedingly small, the above quotation indicates the seriousness of the AEC responsibility as to reactor hazards.[9]

From the start of Government operations involving reactor facilities, the Manhattan Engineering District and later the AEC established the most stringent precautions and elaborate safeguards affecting reactor design, location and operation. The record of radiation safety in Government activities achieved by the MED, the AEC, and the operating contractors has been outstanding.[10]

In authorizing private activity in the act of 1954, Congress assigned to the AEC the basic responsibility for the protection of public health and safety in the regulated private program, as in the Government-directed program. In the private program, the AEC was directed to secure effective safeguards by means of a system of licensing, regulation and inspection of private activity. While the licensees were themselves made responsible under the act for the safe operation of the facilities once licensed by the AEC, it was the AEC which had to make the decisive determination that a proposed facility could be constructed and operated in the designated location without undue risk to the health and safety of the public.

D. Factors affecting hazard evaluation in the licensing program

Several factors complicate the AEC assignment in discharging its public health and safety responsibilities in the private program. Despite great progress, much remains to be learned in the new and growing field of reactor technology. The facilities that are presently subject to licensing are of a developmental nature. The Commission has not yet considered it possible to issue clearcut safety standards and regulations, capable of comparatively automatic application, although it recognizes the growing need for such criteria. Each application for a developmental facility must be considered on its individual merits—and the more advanced the reactor design the more obviously this is the case. On occasion, the AEC is confronted with an application involving a reactor design in which all questions of safety are not yet solved but, it is confidently expected, will be solved during the several years in which construction is underway.

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[9] Quoted from p. 3 of letter dated March 22, 1957, from AEC Acting Chairman Vance to Joint Committee Chairman Durham, transmitting report entitled, "Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Power Plants." Estimates of the probability of reactor accidents having major effects on the public ranged from a chance of 1 in 100,000 to 1 in a billion per year for each large reactor. In the previous year, the report of the Joint Committee on the proposed indemnity legislation had stated:

"The possibility of dangerous materials escaping and causing damage outside the reactor facilities is infinitesimal. However, the possibility does still exist" (S. Rept. No. 2298 and H. Rept. No. 2531, 84th Cong., 2d sess., at p. 2). The Joint Committee early recognized that this remote possibility, with its direct bearing on the public health and safety, also created a related problem of liability in connection with the operation of reactors which might be a deterrent to further industrial participation in the program. Accordingly the Joint Committee initiated efforts early in 1956 to investigate the problem, holding a seminar and 2 sets of hearings on bills introduced by Joint Committee members. On June 22, 1956, the Joint Committee reported out a bill, introduced by Senator Anderson in the Senate (S. 4112) and Mr. Price in the House (H. R. 12050), to protect the public by providing governmental indemnity up to $500 million and granting limitation of liability for persons in the atomic-energy program. The history of the Joint Committee's efforts, and a section-by-section analysis of the proposed bills are contained in the reports from the Joint Committee (S. Rept. No. 2298 and H. Rept. No. 2531, 84th Cong., 2 sess.) accompanying the 2 bills. The bills were not brought up for floor debate during the 84th Congress, but similar bills incorporating some minor Committee amendments were introduced by Senator Anderson (S. 715) and Mr. Price (H. R. 1981) early in the 85th Congress. Chairman Durham has announced that the Joint Committee plans to hold hearings on these bills during the last week in March 1957. For an excellent discussion of the indemnity problem and possible solutions, see report prepared by the legislative drafting research fund of Columbia University for Atomic Industrial Forum, Inc., entitled "Financial Protection Against Atomic Hazards" (January 1957). The extent of possible damage from a catastrophic reactor accident is discussed at pp. 18–19 of the Forum Report.

[10] For an excellent summary of the AEC program, see Atomic Energy Commission 21st Semiannual Report (January 1957), pt. 2, on Radiation Safety in Atomic Energy Activities.

The AEC's promotional responsibility adds a second complicating factor to the hazard evaluation process. Under more conventional circumstances in a mature industry, there would be little reason for the Government to authorize the start of private construction of a facility until all questions of safety were cleared up. In the case of atomic-power development, however, the Government is affirmatively interested in having private industry assume the initiative in undertaking construction of demonstration reactors of advanced designs, with the prospect of achieving the technological breakthroughs which private enterprise has historically demonstrated its capacity to achieve. Thus, in passing on reactor safety, the AEC may be in a position of having to decide whether to deny, or significantly delay granting, an application for a construction permit on the grounds that all safety factors have not been sufficiently resolved, or of issuing a "provisional" permit on the assumption that the safety factors appear capable of resolution during the course of construction, and that a final license will therefore be capable of issuance.[11]

Another course open to the Commission would be to make a policy determination to license only those developmental facilities for private construction that were of well-proven designs. Such a determination, however, would remove from private industry much of the pioneering work which the act of 1954 had been designed in part to make possible.

A third factor complicating the hazard evaluation process is that much of the technical information contained in the application is prepared by the reactor equipment manufacturer, rather than by the applicant, normally a utility, a group of utilities, or a public power group. Thus the AEC must satisfy itself, in some or all cases, as to the technical competence and responsibility both of the applicant and also the manufacturer whom the applicant has contracted to build the reactor. Some of the preliminary conferences involve discussions between AEC staff, the applicant, and the equipment manufacturer, and resulting allocation of responsibility for technical decisions may become blurred, or else the technical designs are formulated by a group one step removed from the AEC authorities, who must make the final decision.

A final factor complicating the AEC's safety responsibilities, is that, in the private program, industry and not the Government selects the location and design of the reactor, subject to approval by the Commission. At times, this may pose a difficult problem for the AEC in evaluating reactor safety. For example, an applicant might propose to construct a reactor of advanced design which the AEC is interested in having private industry undertake, but in a location near populated areas. If the Commission had decided to construct such an experimental reactor as part of the Government-directed program, it might have chosen a location more remote from centers of population that reduced the hazard factor to a minimum. The problem posed for the AEC by the private program would then be one of deciding at what point a less isolated location increased the hazard factor to an unacceptable extent. The problem could be further complicated by the knowledge in a given case that disapproval of reactor location might induce the applicant to abandon the project altogether, but the AEC cannot delegate final responsibility for reactor safety.

[11] See sec. 50.35 of pt. 50, AEC Regulations, 10 C. F. R., reprinted in appendix 3 of this report.

DEVELOPMENTS SINCE 1954

In the 2½ years since the passage of the act, there have been a number of developments in the Commission's administration of its regulatory responsibility which makes an appraisal of the facilities licensing program appropriate at this point. Early experience grew out of applications for construction and operation of research reactors, with assistance by field offices. By mid-1956, the Commission had formulated and issued basic regulations under the act pertaining to the licensing of facilities. These included regulations on the licensing of production and utilization facilities,[12] and rules of practice governing the conduct of licensing proceedings.[13] In addition, the AEC established an internal organization for the handling and processing of license applications by private industry.

In administering the provisions of the act, the Commission made an innovation by establishing the so-called power demonstration reactor program, designed to encourage nuclear power development activity by private industry. The AEC called upon industry to come forward with proposals for power reactor construction. Proposals would be considered by the Commission, and either accepted as a basis for contract negotiation or rejected. If accepted, application might then be made for a construction permit, and contract negotiations and application processing would then proceed simultaneously. The contracts of assistance might provide for varying amounts of Government assistance, services, and financial support for research and development aspects of the licensed activity. This program, combining elements of Government encouragement, Government subsidy, and Government regulation, raised anew the question of the relationship between the AEC's promotional and regulatory functions established by the 1954 act.[14]

By the summer of 1956, private industry had filed applications for a number of construction permits including three for the construction of large-scale experimental power reactors, which had been processed and approved by the Commission.[15] Some of the applications had

[12] Pt. 50 of AEC Regulations, 10 C. F. R., Licensing of Production and Utilization Facilities, published in the Federal Register on January 19, 1956. Excerpts are reprinted in appendix 3.

[13] Pt. 2 of AEC Regulations, 10 C. F. R., Rules of Practice, published in the Federal Register on February 4, 1956. Amendments concerning "parallel procedures" were published in the Federal Register, December 8, 1956. Excerpts are reprinted in appendix 3.

[14] The power demonstration reactor program was formulated and first announced by the AEC in January 1955. A second invitation was extended in September 1955, and the third round was announced on January 7, 1957.

[15] The following chart indicates number of applications received, and actions taken, by AEC, in 1955 and 1956, on applications to construct and operate facilities:

	1955			1956		
	Applications	Construction permit	Operating license	Applications	Construction permit	Operating license
Research reactors	7	4	2	13	2	1
Critical experiment facilities	2	2	----------	6	2	----------
Demonstration power reactors	2	----------	----------	3	4	----------

In addition the AEC received, in 1956, 4 applications to transfer, acquire, and operate research reactors, and 5 applications to export research reactors, and issued 1 export license. In the first 2 months of 1957 the AEC received 4 applications to construct and operate research reactors, 3 applications to transfer, acquire, and operate research reactors, and 3 applications to export research reactors. It issued 2 construction permits (1 for 3 research reactors), 1 license to operate a research reactor, and 2 licenses to export research reactors.

been submitted under the power demonstration reactor program, in which both a facilities license and a contract of assistance had been contemplated; others had been submitted as conventional license applications, with no separate contract of assistance involved.[16]

Thus, by 1956, the national atomic power development program consisted of three distinguishable types of Government-industry relationships. There was (1) the Government-directed and Government-financed reactor development program; (2) the independent industrial program of licensed private activity; and (3) the power demonstration reactor program (a hybrid of the first two), comprised of those who were licensed by the Commission and who were also the recipients of negotiated contracts of assistance.

The issuance of construction permits by the Commission prior to mid-1956 had other characteristics relating to reactor safety which underscored the appropriateness of a reappraisal of the licensing system at this time. In the case of the three applications for construction permits for large scale power reactors, the AEC issued the permits without a prior public hearing or prior notice of intent. Moreover, these actions were taken by the AEC on the basis of an evaluation of reactor safety which was not publicly disclosed. No reports on reactor safety were published prior to, or contemporaneously with, the announced decision to issue a construction permit. In the case of one of the applications, that of the Power Reactor Development Co., it became known that a report by the AEC's Advisory Committee on Reactor Safeguards had raised substantial questions about the safety of the reactor design.

These developments brought sharply into focus the question of AEC procedures and organization in issuing licenses for reactor facilities, with particular reference to questions of reactor safety. The immediate concern was whether the existing procedures and organization of the Commission assured maximum detachment and objectivity in hazard evaluation, and provided maximum protection of the public health and safety. The more long-run problem was whether a single governmental unit should act both in a quasi-judicial capacity on applications by private groups to build reactors and also act as promoter and developer using Government funds, and as a possible competitor to some non-Government projects.

Three possible changes in existing procedures suggested themselves to the Chairman of the Joint Committee as measures that might further these ends: the requirement of public hearings in initial licensing proceedings, the required publication of reactor safety reports, and the sharper organizational separation of the adjudicative functions of the AEC.[17]

[16] The AEC issued construction permits in June 1956 to Consolidated Edison Co. of New York and Commonwealth Edison Co. of Illinois for the construction of large-scale power reactor plants without direct Government assistance.

[17] See letter dated August 9, 1956, from Senator Anderson to Mr. Strauss, p. 1, supra. For further background material concerning the procedures followed by the AEC in the PRDC case, see appendixes 6, 7, 8, 9 and 10 of this report.

RECENT CHANGES BY AEC

Subsequent to the commencement of the study by the Joint Committee, and in the course of its conduct, the AEC has made a number of significant changes in procedure in its licensing system. Several of these changes relate directly to the three questions under consideration. These actions included the recent issuance of notices of proposed action, prior to the issuance of a construction permit, with the opportunity to request a hearing provided;[18] the publishing of reactor hazard analysis reports by the AEC staff (but not the report of the Reactor Safeguards Committee) prior to final action;[19] and an internal separation of AEC staff for the conduct of the public hearing on the PRDC construction permit.[20] These measures will be considered further in the discussion below.

POLICY CONSIDERATIONS

In pursuing the three areas of inquiry established for this study, there are a number of policy considerations of somewhat opposing tendency to be taken into account. Policies and goals which would be advanced by requiring more public hearings, more public safety reports, and a sharper separation of the AEC licensing function include the following:

1. Objectivity in the evaluation of reactor hazards removed from promotional considerations, contributing to the protection of the health and safety of the public;

2. Increased public confidence in the regulating agency because of more formalized and open proceedings, separation of prosecutor and judicial functions, and provision of a quasi-judicial body which is not the primary competitor of the new industry, thereby creating a regulatory framework within which the industry may grow as the need for Government assistance diminishes; and

3. Increased emphasis upon safety in the new industry, to protect both the private and public investment in the program, and to take maximum precautions to prevent a serious reactor accident which would set the program back many years.

On the other hand, in examining the appropriateness of new statutory requirements, one must also take into account the following considerations, which tend to oppose requiring more public hearings, safety reports, and separation of the licensing function:

1. The need for top level coordination in the entire atomic energy program at the present time because of the interrelationship of the program being licensed with other AEC activities;

2. The need for flexibility and administrative efficiency in the new field, in order to avoid unnecessary procedural delays and governmental redtape; and

[18] This procedure was first followed by the AEC on December 28, 1956, in connection with the application for construction of a proposed research reactor near Princeton, N. J. See documents reprinted in appendix 14, especially B. This new type of procedure is discussed in more detail in pts. I and II of this report, infra.

[19] Publication of a memorandum discussing the safety hazards of a proposed reactor was also first made in connection with the proposed research reactor near Princeton, N. J., referred to in note 18. The memorandum is reprinted in appendix 14C of this report. This move by AEC is discussed in more detail in pt. III of this report.

[20] See AEC letter dated December 12, 1956, to Joint Committee concerning separated staff for PRDC hearing, reprinted as appendix 11.

3. The desirability of avoiding unnecessary duplication of functions, or the imposition of added burdens upon the AEC and its staff by procedural or organizational changes which would demand additional scarce technical and administrative personnel.

These conflicting policy considerations affect all three areas of inquiry, and will be examined in more detail later in this study.

PART I. PRESENT AEC LICENSING PROCEDURES AND ORGANIZATION

A. PROCEDURES

The 1954 act provided a legal framework and certain statutory requirements for authorizing the construction, and licensing the operation, of nuclear facilities, including reactors.[1] The statutory requirements and procedures, in turn, have been amplified by regulations issued by the Commission.[2]

Under the act and regulations, the licensing of reactor facilities is a two-step procedure. One must first obtain a construction permit to build the reactor. Then after construction is completed, the Commission will normally issue a license to operate the reactor if the applicant has complied with the conditions of the construction permit and applicable laws and regulations, and has passed an inspection test conducted by the AEC.[3]

1. *Construction permit.*—Under the procedures established by the AEC,[4] close contact between the prospective applicant and AEC staff personnel may be developed long before the applicant actually submits his application for a construction permit.

Thus the prospective applicant is encouraged to come to the Commission, or to its field offices, to discuss the various types of reactors considered ready and available for private development, and the Commission may indicate that certain types of reactors are considered more worthy of Government assistance than others.

In the field of reactor safety, the Commission also encourages preliminary discussions between AEC staff personnel and representatives of the prospective applicant in order that he may receive full explanations of the safety standards and requirements specified by the Commission.

When the application is received, after as many preliminary discussions as necessary, it is routed to the Division of Civilian Application, which performs the major role within the AEC in the processing of applications for construction permits and facility licenses. That Division assigns it a docket number and undertakes an administrative review, checking specific points to determine whether the application has been submitted in accordance with, and contains the information required by, the act and the AEC regulations.[5]

Many applications have been submitted without the data needed by AEC to make the necessary determinations. The Commission has, therefore, encouraged applicants to continue to conduct as many informal meetings and discussions with the technical staff of the Commission as necessary in order to complete the application and, in turn, to obtain information from the Commission as to the latest developments in the Commission's program which may be of interest

[1] For pertinent excerpts from the act, see appendix 1.
[2] For pertinent excerpts from the AEC Regulations, see appendix 3.
[3] See sec. 185 of the act, reprinted in appendix 1.
[4] See reports forwarded by AEC letter of October 9, 1956, reprinted as appendix 4.
[5] 15 steps in the Administrative Review are listed in the AEC report, appendix 4A, at p. 101.

to the applicant. These discussions are attended by a member of the Division of Inspection, when possible, to provide that Division with background information to assist it in subsequent inspections.

In processing an application for a construction permit or facility license, the Division of Civilian Application obtains advice from various other AEC divisions. Information concerning the financial qualifications of the applicant, as set forth in the application, is forwarded to the Division of Finance for review and advice. Descriptive data submitted by the applicant concerning the proposed facility are forwarded to the Division of Reactor Development for advice as to whether the proposed reactor will be one "leading to the demonstration of the practical value" of that type of facility for industrial or commercial purposes, whether the special nuclear material requirements appear reasonable, and whether the applicant appears to be technically competent.

Advice is also obtained from the Reactor Development Division and from the Division of Production as to whether existing or proposed AEC reprocessing facilities can handle the expected returns of fabrication scrap and spent fuel from the reactor. Advice as to whether the anticipated requirements of nuclear fuel will be available for the required reactor is obtained from the Division of Nuclear Materials Management.

Besides requesting advice from the other AEC divisions, the Division of Civilian Application, through its technical staff, undertakes a review of the Hazards Summary Report, a required part of the application, to evaluate health and safety problems. The procedures followed by the AEC in evaluating reactor hazards are described in part III of this report on Reactor Safety Reports. They include hazard evaluation by the AEC technical staff and, in some cases, reference to the Advisory Committee on Reactor Safety for advice and a report on a specific reactor facility.

The Division of Civilian Application also makes the determination as to the amount of information in the application which should be made public, and dispatches a copy of the application, including the Hazards Summary Report, to the AEC public document room. The Commission may delete from this material any classified information, and may also authorize withholding of any document or part thereof from public inspection if it makes the determination that disclosure of the contents is not required in the public interest and that disclosure would adversely affect the interest of the applicant.[6] The Commission has complied with requests to withhold information by two applicants for construction of research reactors unsupported by Commission funds.[7]

After completing its review and evaluation of safety factors, and after receiving the necessary advice from the other divisions (and, when requested, from the Advisory Committee on Reactor Safeguards), the Division of Civilian Application assembles the materials

[6] See AEC Regulations, sec. 2.790 of pt. 2, and also pt. 9 on Public Records. Excerpts are reprinted in appendix 3. For comments received by the AEC on pt. 9 when it was proposed as a regulation, see appendix 12.

[7] See appendix 13B for AEC letter of March 6, 1957, forwarding information on requests by applicants to withhold information. Also see appendix 13A, for AEC letter to General Dynamics Corp., dated November 27, 1956, as an instance in which AEC determined that certain information bearing upon reactor hazards evaluation should not be withheld. For a good explanation as to AEC policy regarding withholding or disclosure of trade secrets, see Plaine, The Rules of Practice of the Atomic Energy Commission, 34 Tex. L. R. 801, 819–22 (1956).

and prepares "a statement of the entire case," with recommendations as to the issuance or denial of a construction permit.[8]

When the application has proceeded to this point, the stage has been set for formal agency action on the application.

The AEC Manual indicates that the Commission has delegated authority to the Director of the Division of Civilian Application to issue, renew, and amend licenses, and to issue notices of denial of applications.[9]

At the present time, the Director does not issue any construction permits without first referring the application, with recommendations, to the General Manager. The General Manager, in turn, at the present time refers to the Commission all applications for power reactors, and some applications for research reactors and critical assemblies. Thus, at present, the ultimate decision is made either by the General Manager or by the Commission. who then direct the Director to issue either the permit or the notice of denial.

The various procedures the Commission may then follow, pursuant to the Act and AEC regulations, are outlined in part II of this report on Public Hearings. In brief, the Commission may (*a*) take action first, subject to a subsequent request for a hearing within 30 days; (*b*) issue a notice of proposed action, with opportunity provided to request a hearing; or (*c*) order a public hearing. Until late December 1956 the Commission followed only course (*a*); since then, as will be discussed more fully later in this study, it has followed only course (*b*).[10]

2. *License to operate facility.*—Following the issuance of a construction permit and in the course of reactor construction, the applicant continues to submit to the Commission such information as may be required to bring the license application up to date. This information is evaluated by the Division of Civilian Application, upon advice from other divisions when appropriate, as in the case of the original application.[11]

Before the construction permit can be converted into a license to operate the reactor, the applicant must submit a final Hazards Summary Report, which is routed to the technical staff of the Division of Civilian Application for review and analysis. The technical staff, having consulted with the Advisory Committee on Reactor Safeguards if it chooses, then submits its opinion as to whether the final design of the reactor provides reasonable assurance that the health and safety of the public will not be endangered by its operation

The Division of Inspection must also conduct a physical inspection of the reactor and advise the Division of Civilian Application whether the reactor has been constructed in conformity with the license application and with the rules and regulations of the Commission.

Before the license issues, the Division of Civilian Application prepares a "staff paper" with supporting materials and staff recommendations. This paper is then routed to the General Manager and the Commission. If the recommendations of the responsible divisions are favorable, the Commission would normally grant the license to

[8] See appendix 4A, step 12, at p. 103.

[9] See also statement of functions of that division forwarded by AEC letter of January 4, 1957, appendix 5. Pt. 1 of the AEC Regulations on Organization has not been amended since establishment of the Division of Civilian Application. The delegation of authority by the Commission to the Director of that Division to issue or deny licenses has apparently not been published in the Federal Register as required by sec. 3 (a) of the Administrative Procedure Act.

[10] See AEC letter dated January 4, 1957, to Joint Committee, appendix 5.

[11] See report prepared by AEC, entitled "Conversion of the Construction Permit to a License Authorizing Operation of the Facility," appendix 4B.

operate the reactor, in the absence of any good cause being shown not to do so.

At the time the Commission takes action to grant or deny the license to operate the reactor, a public announcement is issued, and a notice of action taken is published in the Federal Register.[12]

B. ORGANIZATION

As the Introduction and summary of procedures have indicated, there are 3 divisions of the Commission principally involved in the licensing, regulation, and construction of nuclear facilities, and each one reports directly to the General Manager and the 5 Commissioners under the present organization.

(1) *The Division of Civilian Application* performs the major role in the processing and evaluation of facility license applications, including questions of reactor safety. However, this Division also makes recommendations to the Commission as to policies and prices of certain types of governmental assistance, including the possible use of AEC facilities by licensees, the use of AEC and AEC contractor personnel to assist private industry through consultations, the use of access permits to assist private industry and others to obtain technical information, and the determination of prices to be paid by licensees for the use of nuclear materials. At the present time, the Division contains 6 branches, and of these, 3 (the Licensing Branch, the Hazards Evaluation Branch, and the Orders and Regulations Branch) perform primarily regulatory or licensing functions, whereas 2 others (Commercial Development Branch and Materials and Services Branch) perform a number of "promotional" or Government assistance functions.

The sixth branch (Radiation and Interagency Branch) performs some regulatory functions in developing plans for cooperation with State and local governments, and, in collaboration with the Isotopes Extension at Oak Ridge, some promotional activities in encouraging uses of radioisotopes. The functions of the six branches are set out in more detail in the footnote below and in appendix 11A.[13]

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[12] For further details, see appendix 4B.

[13] The Licensing Branch (16 employees) licenses facilities, operators of facilities, and source and special nuclear (but not byproduct) materials.

The Hazards Evaluation Branch (13 employees) develops safety standards for facilities, evaluates hazards aspects of proposed facilities, and provides staff advice to AEC offices and divisions on the safety aspects of reactors.

The Orders and Regulation Branch (11 employees) develops rules and regulations to implement the Division's programs and administers various regulatory matters not falling within the responsibilities of other branches of the Division.

The Commercial Development Branch (16 employees) develops programs to encourage private participation in the program, identifies industrial activities which lend themselves to performance by private industry, administers the access program to restricted data, prepares and disseminates statistics and reports of the private atomic energy industry, and develops procedures governing the indemnification of licenses in case of nuclear incidents.

The Materials and Services Branch (11 employees) develops and administers programs for permitting private industry to secure materials and services from AEC, and develops policies and prices relating to (*a*) materials sold or leased by AEC to private industry and materials acquired by AEC from private industry, (*b*) the use of AEC facilities by industrial or other private organizations, and (*c*) the use of AEC and AEC contractor employees in providing consultations to private industry.

The Radiation and Interagency Branch (12 employees) develops and administers programs for cooperation with State and local governments, develops safety standards in the use, storage, and disposal by licensees of nuclear materials, and in collaboration with the Isotopes Extension at Oak Ridge (an additional 48 employees), encourages the use of radioisotopes by private industry.

The Division of Civilian Application also has 7 employees in the office of the Division Director, and 7 employees in an administrative office, making 93 employees in the Washington, D. C., headquarters, and 48 at the Oak Ridge extension, or a total of 141. All employee figures are as of Mar. 1, 1957.

See also AEC announcement describing Organization of the Division of Civilian Application, appendix 11A.

(2) *The Division of Inspection* not only inspects reactor licensees, but also inspects AEC contractors and AEC offices and employees as required by the act. It is a factfinding group which obtains information as to compliance or noncompliance with the act and AEC regulations. In the licensing process, the Inspection Division becomes familiar with the design details of the proposed reactor as soon as the application is received. Personnel from this division may perform periodic inspections during construction, and make a critical recommendation when construction is completed as to whether or not the license to operate may issue. Thereafter they inspect for compliance with AEC regulations.

(3) *The Division of Reactor Development* has responsibility both for the AEC financed program of research and development on reactors and also for negotiating contracts with private industry as to amounts and types of Government assistance to be provided under the power reactor demonstration program. All of the work of this division falls generally under the "developmental" or "promotional" categories, but as indicated in the previous section, it also provides important advice to the Division of Civilian Application on questions of reactor design and technical qualifications in the licensing process.[14]

[14] For statements prepared by the AEC as to functions and responsibilities of these 3 divisions, see appendix 5.

PART II. PUBLIC HEARINGS ON REACTOR LICENSE APPLICATIONS

The first problem raised by Senator Anderson's letter of August 9, 1956 to Mr. Strauss (see Introduction, p. 1) was whether the Atomic Energy Act should be amended to require that a public hearing be held in some or all cases before the grant or denial by the Commission of a construction permit or a facility license.

The purpose of such a requirement would be to obtain an open forum in which matters of reactor safety and comparative merits of competing applications could be thoroughly aired and made known to the public, even in noncontested cases.

PRESENT PUBLIC HEARING REQUIREMENTS OF THE ATOMIC ENERGY ACT AND THE ADMINISTRATIVE PROCEDURE ACT

No constitutional question would seem to be raised by the present statutory hearing provisions, since the Supreme Court has held that due process requirements are met when opportunity for a hearing is provided before final agency action,[1] and the Atomic Energy Act meets this constitutional standard. The question pursued is whether, for policy reasons, the Atomic Energy Act should provide for hearings in some cases even when not specifically requested by an interested party.

The Atomic Energy Act, at the present time, requires only that there be provided an *opportunity* for a hearing, as opposed to the automatic holding of a hearing, before action is taken by the Commission on an application for a construction permit or a facility license. Thus section 189a of the act provides that:

> In any proceeding under this Act, for the granting, suspending, revoking, or amending of any license or a construction permit * * * the Commission shall grant a hearing *upon the request* of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceedings. [Italic added.]

This lack of a requirement of a public hearing in AEC licensing proceedings is unaffected by the applicability of the Administrative Procedure Act.[2]

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[1] *United States* v. *Illinois Central R. R. Co.*, 291 U. S. 457 (1934). See more detailed discussion on constitutional law, and applicable statutory provisions, including those of other Federal agencies, in Requirements of Hearings in Administrative Adjudication, by Prof. J. Forrester Davison, appendix 15.

[2] Sec. 181 of the Atomic Energy Act provides that the provisions of the Administrative Procedure Act shall apply, except when classified information is involved when the Commission shall establish "parallel procedures." See sec. 181 reprinted in appendix 1. Before the AEC may *revoke* a license, it is required by sec. 186b of the act to follow the provisions of sec. 9 (b) of the Administrative Procedure Act, which requires notice of the deficient "facts or conduct," opportunity for compliance, and a hearing upon request. However, even in cases of revocation, the AEC may, under sec. 186c, recapture the nuclear materials, and enter upon and operate the facility prior to complying with the special revocation procedures if the Commission finds the case "to be of extreme importance to the national security or the health and safety of the public." During the floor debate in amending the Atomic Energy Act in 1954, Senator Anderson indicated that he favored public hearings on all reactor applications. See Legislative History, appendix 2, sec. 189, pp.72-73.

If a hearing is held, the extent to which it can be conducted in public is limited by statute when restricted data or defense information are involved. Section 181 provides that in such cases

> the Commission shall provide by regulation for such *parallel procedures* as will effectively safeguard and prevent disclosure * * * *with minimum impairment* of the procedural rights * * *. [Italics added.]

In the first public hearing held by the AEC in the licensing program, it developed that restricted data was involved. The AEC then issued regulations providing for the use of parallel procedures.[3] Whether hearings held pursuant to such regulations would satisfy the requirements of a public hearing has yet to be determined. The recent action of the Commission in announcing declassification of a "broad range of information necessary to the design, construction and operation of civilian power reactors * * *" may reduce the extent to which parallel procedures need to be invoked in the future.[4]

Requirements of notice of licensing actions or hearings

The value of a public hearing, particularly in a new field such as this, may depend in large part on the issuance of public notice of proposed action in advance of issuing the license or holding the hearing.

Section 182b provides for extensive notice and publication requirements [5] in commercial license proceedings under section 103. However, applicants are not required to apply for construction permits and facility licenses under section 103 until the Commission has made a finding of "practical value" for that type of facility,[6] and to date the Commission has made no such finding. As for section 104 licenses, which include all facility licenses issued to date, there are no direct provisions concerning notice to be given before issuing a license, except that section 104b provides that in issuing licenses under that subsection the Commission shall impose regulations and terms which "will be compatible with the regulations and terms of license which would apply" in the event that a section 103 license should later be issued for that type of facility. However, to date the AEC has not followed the notice and publication requirements of section 182b in issuing construction permits or facility licenses under section 104.[7]

AEC REGULATIONS AND PRACTICES

The Commission has promulgated regulations in which opportunity for a public hearing is provided, either before or after the Commission has taken initial action in granting or denying the application. Under section 2.102 of the AEC regulations the Commission may:

1. Take the action of granting or denying the application, subject to a proper request within 30 days for a hearing by the applicant or by an intervener; or

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[3] See excerpts from amendment to pt. 2 (published in Federal Register Dec. 8, 1956), appendix 3.

[4] The Commission put into effect on December 5, 1956, a new Declassification Guide intended to permit declassification of much reactor technology. See AEC 21st Semiannual Report (January 1957), at p. 54.

[5] Sec. 182b reads:

"The Commission shall not issue any license for a utilization or production facility for the generation of commercial power under section 103, until it has given notice in writing to such regulatory agency as may have jurisdiction over the rates and services of the proposed activity, to municipalities, private utilities, public bodies, and cooperatives within transmission distance authorized to engage in the distribution of electric energy and until it has published notice of such application once each week for four consecutive weeks in the Federal Register, and until four weeks after the last notice."

[6] See sec. 102 of the Act, reprinted in appendix 1.

[7] For text of sec. 104b, see appendix 1.

2. Issue a notice of proposed action, allowing 15 days thereafter for filing request for hearing; or

3. Order a public hearing, after providing "timely" notice and specification of the issues.[8]

The Commission has taken the position that whichever of the above three courses is followed, the proceeding is not complete until the opportunities for hearing have expired, or if a hearing is scheduled, until the hearing has been held and final action taken by the Commission on the basis of the record.[9]

Prior to December 28, 1956, the AEC uniformly chose to follow the first procedure of taking its action first, subject to a request for a hearing within 30 days. In one case, that of the PRDC, a request was made for hearing by an intervener, which the Commission granted.[10]

In such a situation, where the Commission has taken initial action, and then granted a request for a hearing, the status of the construction permit during the period of the hearing may assume unusual importance, since the interval may be many months. If the permit continues in effect during that period, substantial construction may have taken place and yet the permit is subject to ultimate cancellation and substantial loss to the applicant. On the other hand if the permit is automatically suspended during the period of the hearing, substantial time could be lost in the private development program, in the event the application is finally granted. In the PRDC case, after protests were received and the hearing scheduled, the AEC took the position that it had the authority to maintain the construction permit in effect, pending the outcome of the hearing, and the applicant accordingly commenced construction.[11]

Since December 28, 1956 the Commission has uniformly followed the second procedure of issuing a notice of proposed action allowing 15 days for filing requests for a hearing.[12] The status of the construction permit, in the event a hearing is requested and scheduled, has not yet been determined.

To date the Commission has never followed the third procedure of ordering a public hearing after timely notice and specification of the issues.

PUBLIC HEARING REQUIREMENTS AND PRACTICES OF OTHER AGENCIES

Before examining the merits of these three procedures in the light of the characteristics of the atomic energy program, some preliminary guidance is provided by a reference to public hearing requirements and practices of other Federal agencies.

In so doing one may consider the applicability to the atomic program of the reasons of public policy that led to the requirement of public hearings in some or all circumstance.

As a general matter of administrative policy and practice, the 1941 report of the Attorney General's Committee, appointed to study administrative procedure in Federal agencies, stated that formal

[8] Sec. 2.102 is reprinted in appendix 3.

[9] See memorandum of Commission published Oct. 9, 1956, concerning hearing on PRDC application, appendix 7E.

[10] See AEC order, dated Oct. 8, 1956, granting hearing, appendix 7D.

[11] The AEC order of Oct. 8, 1956, denied the intervener's motion to suspend the construction permit pending the outcome of the hearing. See appendix 7D.

[12] See Notice of Proposed Action, issued by AEC, concerning proposed research reactor near Princeton N. J., appendix 14B.

adjudication procedures involving a public hearing should be employed in two principal types of situations:

> One is when the investigation and the possible resulting action are of such far-reaching importance to so many interests that sound and wise government is thought to require that proceedings be conducted publicly and formally so that the information on which action is to be based may be tested, answered if necessary, and recorded. The other type is where the differences between private interests or between private interests and public officials have not been capable of solution by informal methods but have proved sufficiently irreconcilable to require settlement through formal public proceedings in which the parties have an opportunity to present their own and attack the others' evidence and arguments before an official body with authority do decide the controversy.[13]

Applying these general standards, the licensing of reactors could be considered to be of far reaching importance to many interests and therefore to warrant formal public proceedings. Similarly, the denial of an application for a reactor license might be regarded as the type of situation in which the differences between private interests and public officials required settlement through formal proceedings including a public hearing.

Federal Communications Commission

An analysis of the public hearing requirements of the Federal Communications Act is especially pertinent for two reasons. First, it is revealed in the legislative history of the Atomic Energy Act that the two-step procedure of obtaining first a construction permit and thereafter an operating license was borrowed from the Communications Act. Secondly, the license application procedures specified by the Federal Communications Act were extensively amended by the Congress in 1952 to require more formalized procedures by the FCC in passing upon applications. These so-called McFarland amendments therefore represent a recent consideration by the Congress of the procedures to be required of one Federal agency in initial licensing.

Competing applications.—The Supreme Court has interpreted the Communications Act to require that when applications have been received from two or more parties for the same facility, consolidated hearings must be held.[14]

The concept of competing applications is perhaps not as clearcut in the case of applications to the AEC for licenses as in the case of applications to the FCC. However, if there should be a shortage of nuclear fuel, or if there should someday be many reactor applications in a given locality or for a given site, special provisions for formalized comparative proceedings may be in order.

Single applications.—When a single application is received by the FCC, it may grant the construction permit or license without holding a hearing. But if no hearing is held prior to the grant, the 1952 McFarland amendments establish a protest procedure where parties affected may challenge it in formal protest within 30 days, and the

[13] Administrative Procedure in Government Agencies, S. Doc. No. 8, 77th Cong. 1st sess., at p. 43.
[14] *Ashbacker Radio Corp.* v. *Federal Communications Commission*, 326 U. S. 327 (1945).

Commission must enter findings on these protests, and a hearing is thereafter held.[15]

These amendments of the Communications Act had been based on a congressional decision to formalize the proceedings in the issuance of construction permits and licenses and to provide a greater opportunity for public hearings. Under the 1952 amendments, in case of protest, the construction permit was automatically suspended for the duration of the hearings. Further amendments in 1956, however, authorized the FCC to continue the permit in effect if it determined that the continued authorization was necessary to the maintenance or conduct of an existing service, or otherwise in the public interest.[15]

It is thus evident that the FCC procedure is comparable to the first procedure followed by the AEC, but with the difference that under the Communications Act the construction permit does not ordinarily continue in effect pending the outcome of a hearing. The greater complexity of reactor construction and the need for rapid private development in the atomic field provide a factual basis for continuing in effect the construction permit during the hearing period. On the other hand, the extensive commitment of private funds in the interim is a factor which could make the decision to deny the application a more difficult one for the AEC than the FCC.

In the two-step process of construction permit and license to operate, the first stage is clearly the more critical of the two in FCC licensing. Once the construction permit is granted, the operating license is issued largely as a matter of course, whereas in the case of the AEC a very specific determination is required, particularly as to the issue of reactor safety, before the operating license is issued. However the legislative history of both acts indicate that the two-step procedure was adopted to prevent expensive unauthorized construction prior to an application for a license, which might thereafter be denied.

One final distinction between the FCC and the AEC is the greater formality of the FCC in the case of denials of a license application. If the FCC intends to deny the application, it must first notify the applicant stating the reasons for its proposed denial and giving him an opportunity to amend his application to meet agency objections. Then, if the FCC still decides that the application should be denied, it must schedule a formal hearing, after notice to the applicant and all other interested parties.[16] In the case of the AEC no distinction is made between procedures in granting and denying applications.

Federal Power Commission.—To the extent that the issuance of an AEC construction permit may be considered analagous to the issuance of a certificate of public convenience and necessity, it should be observed that public hearings are required by the Natural Gas Act for such certificates authorizing the construction or extension of natural gas facilities. The legislative history indicates that representatives of industries producing fuels competing with natural gas desired public hearings and formalized procedures in order to be assured of "full participation" in the Commission deliberations on applications for natural gas line extensions.[17]

Shortened procedures.—Other agencies have adopted hearing procedures providing for "shortened" or abbreviated proceedings, the

[15] 47 U. S. C. A., sec. 309 (c).
[16] 47 U. S. C. A., sec. 309 (b).
[17] See Natural Gas Act Amendments, Hearings before the House Committee on Interstate and Foreign Commerce on H. R. 5249, 77th Cong., 1st sess., at pp. 2-6 and pp. 50-51.

essence of which is to provide for substitution of sworn memoranda of fact and argument for the usual oral hearings. Such a procedure is particularly adaptable for use in noncontested hearings.[18]

FOUR POSSIBLE PROCEDURES BY WHICH THE AEC COULD MEET ITS PUBLIC HEARING REQUIREMENTS

The AEC has followed, or could follow, four different procedures in meeting its obligations to provide opportunity for hearings on applications for construction permits or facility licenses. These four procedures can be referred to in shorthand as follows:

1. Action first;
2. Notice of intent first;
3. Hearing first; or
4. Notice of intent and hearing first.

The advantages and disadvantages of each of these four procedures will be briefly discussed.

1. *Action first.*—This is the procedure uniformly followed by the Commission prior to December 28, 1956. Action was taken first, i. e., the construction permit or license was issued, without prior notice of intent or hearing, but subject to a proper request for a hearing filed within 30 days. This procedure was followed in 1955 and 1956 in issuing 3 licenses to operate facilities and in issuing 14 construction permits, including 3 for large-scale power reactors.

One advantage of this type of procedure is its administrative simplicity, involving the smallest workload requirement upon the Commission (assuming no public hearing is requested), and, as an internal proceeding, permitting a close relationship between the Commission staff and the advisors to the Commission during the early stages of atomic energy licensing.

The obvious shortcoming of this procedure is that it provides no information to the public, or to prospective applicants, concerning the proposed reactor (other than that supplied by the application), and the factors taken into consideration by the AEC staff and Commissioners in deciding whether the permit or license should issue.

The Commission has indicated that it has decided not to use this type of procedure in the future.

2. *Notice of intent first.*—Since December 28, 1956, the Commission has uniformly followed this second type of procedure. Beginning with the Princeton, N. J., research reactor and the Westinghouse test reactor, it issued a notice of intent or notice of proposed action, stating that it intended to issue the construction permit unless a proper request for a public hearing was received within 15 days. The notice of intent was accompanied by a memorandum prepared by the Division of Civilian Application, describing the reactor, including considerable information as to hazard analysis.[19]

The advantages of this type of procedure are that it provides information to the public prior to Commission action; it should tend to decrease public fears as to reactor safety problems (especially in view of the Commission's excellent past safety record); and it should assist

[18] For discussion of use of shortened procedures by FPC on Natural Gas Act applications, see French and Poland, Federal Power Commission Practice, the Practical Lawyer (ALI, October 1956), at p. 82. For discussion of shortened procedures used by other agencies, see appendix 15.

[19] The Notice of Intent and memorandum are reprinted in appendix 14.

future applicants in advising them of the factors considered by the Commission in passing upon applications.

The principal disadvantage of this type of procedure is that it involves more work for the Commission staff in preparing the notice of proposed action and accompanying memorandum. Also, it is questionable whether the 15-day period is sufficient; perhaps the regulations should be changed to provide 30 days in order that interested parties would have more time to consider the many technical questions presented before having to decide whether to request a public hearing.

3. *Hearing first.*—The Commission has not yet utilized this third type of procedure on any of the applications for construction permits or facility licenses. According to the AEC regulations, when a formal hearing is ordered, "timely" notice of the hearing must be given. This notice must state the time, place, and nature of the hearing; the legal authority and jurisdiction under which the hearing is to be held; the matters of fact and law asserted or to be considered, which will be identified as the specifications of issues; and a request for an answer. The time and place for hearing must be fixed with due regard for the convenience and necessity of the parties or their representatives.[20]

The advantage of this type of procedure is that it provides easy participation by interested parties, freed from the onus of having to request a hearing, and without the burden of having to overcome an initial position announced by the Commission.

On the other hand, such a procedure would presumably not provide the advance information and guidance as to the relevant considerations and their assessment by the AEC that are provided in the notice of proposed action, and the value of the hearing would be limited by the less extensive preparation made possible for the parties.

4. *Notice of intent and hearing first.*—A fourth procedure would be similar to that presently in effect of issuing a notice of proposed action, except that here a public hearing would be automatically scheduled, even if not requested, at the end of the notice period.

The advantages of this notice of intent and hearing procedure are that it would provide the maximum amount of information concerning the proposed reactor to the public, and would also provide easy opportunity for participation by interested parties and the public. This type of procedure would seem to provide maximum assurance of fair and open dealings on the part of the agency.

The disadvantages of this type of procedure are that it would increase the workload of the Commission by imposing both the burden of the second course (notice of proposed action) and of the third course (required hearings).

COMMISSION POSITION

On the general question of whether or not the act should require a public hearing before the grant or denial of a construction permit or license, the Commission has stated its position as follows, in the letter from Mr. Strauss to Senator Anderson dated January 4, 1957: [21]

> *Suggestion the act should require a public hearing before the grant or denial of a construction permit or license.*—We recognize that it is important to inform the public of the salient

[20] See AEC Regulations sec. 2.735, reprinted in appendix 3.
[21] For full text of the AEC letter of January 4, 1957, see appendix 5.

facts and the major factors considered by the Commission in issuance of a construction permit or facility license in view of the inability of the Commission to provide detailed criteria for the construction and operation of reactors at this stage of development. However, the requirement of a hearing in uncontested cases is undesirable because it may involve unnecessary delay in administrative action on an application for a license or permit. Particularly during this period of rapid development in the AEC regulatory program, it would be undesirable to take legislative action which would restrict flexibility in the establishing of administrative procedures beyond those limitations already established by the Administrative Procedures Act.

DISCUSSION OF COMMISSION POSITION

The Commission's position poses a fairly narrow question of delay and inflexibility produced by the added requirement of a public hearing in noncontested applications. In such cases, the most expeditious procedure would be the one originally followed by the Commission of taking action first without prior public notice or public hearing. However, the Commission has now abandoned that procedure and has undertaken either to hold a hearing or to prepare a notice of proposed action outlining the considerations behind the Commission's preliminary position in all cases.[22] Therefore, the burden is now to be measured by the amount of *additional* delay produced by a hearing in noncontested cases, after the Commission has prepared its notice and memorandum.

It is precisely in the noncontroversial applications that the requirement of an automatic hearing would be least burdensome and would consume the least amount of time for the AEC and the applicant to prepare for and thereafter to conduct. With the numerous devices available to expedite proceedings, it is likely that in such a case, the hearing could be completed within a day or so.

When it is further recognized that to date it has taken at least 6 months on the average for the applicant to prepare and the AEC to process a power reaction application, and 2 months on the average to prepare and process a research reactor application, the comparatively small amount of additional time required to conduct a public hearing in a noncontested case would not be likely to work a significant hardship on the applicant or on the AEC.

Much the same point can be made with regard to the position of the Commission on the inflexibility of required hearings. Here, again, the strongest case for continued flexibility is presented by routine applications for small scale research reactors, yet the price imposed by an inflexible requirement would seem to be comparatively small when applied to the cases involving minimum workload and minimum delay.

At the same time, it is equally true that apart from general informational value, the benefits to be derived from a public hearing are of less importance when the facility is a small research reactor, the affected legal interests are few, and the application is not contested.

The primary object of concern giving rise to the proposed require-

[22] See letter dated January 4, 1957, from the AEC to the Joint Committee, appendix 5 at p. 110.

ment of a public hearing is the license application for a facility where the potentially affected groups and members of the public may be numerous but they are not aware of their interest because the private program is new and still in its early stages of growth.

One might consider drawing a line by statute, defining the categories of reactor facilities in terms of power, design, and purpose which would be subject to required hearings in each case, and those categories which would permit some discretion on the part of the AEC as to whether or not hearings should be held.

In analyzing the relative burdens and benefits involved, it is worth noting the recommendation of an outside group of disinterested lawyers, informed on atomic energy matters, which met at the University of Michigan Law School Summer Institute on the legal problems of atomic energy in September 1956. They issued a recommendation that formal hearings should be held on all applications for the licensing of facilities during the present developmental period.[23] The basis for this recommendation was: First, that in view of the various interests that could be affected, a formal hearing would make available a procedure appropriate to the protection, at the earliest possible stage, of all affected legal interests; and second, that the public information provided by such a hearing would serve to foster and maintain the confidence of the general public and State and local authorities in the proposed project.

[23] The recommendation was, in part, as follows:

"*In order to help promote public understanding and acceptance of the atomic energy industry, the Atomic Energy Commission during this present developmental period should hold formal hearings on all applications for licenses for utilization and production facilities.*

"Under sec. 189a of the Atomic Energy Act and applicable provisions of the Federal Administrative Procedure Act, the Commission is not required to hold a hearing on an application for a license for utilization and production facilities unless requested to do so by any person whose interest may be affected by the proceeding. The workshop suggests that, prior to the taking of final agency action on each and every application for a license for utilization and production facilities, the Commission should, as a matter of administrative policy, hold formal hearings in connection therewith." Report of University of Michigan Law School Summer Institute on the Legal Problems of Atomic Energy, at p. 59.

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PART III. PUBLICATION OF REACTOR SAFETY REPORTS

The second problem raised by Senator Anderson's letter of August 9, 1956,[1] was whether the act should require that all reports on reactor safety pertaining to a proposed reactor facility in the licensing program be made public as soon as completed.

The objective of such a proposal would be to inform interested parties and the public at large of the safety factors relating to a proposed facility prior to Commission action on the license application. The requirement of publication would be designed to provide further assurance of a thoroughly objective evaluation of reactor safety, and of greater public knowledge of and confidence in the safeguards adopted in the private power development program.

To provide a foundation for the consideration of the specific question of publication of reports, one must first examine the evolution of AEC hazard evaluation, the current hazard evaluation procedures, and the handling by the AEC of the reports on safety that are developed in the course of the evaluation.

EVOLUTION OF AEC HAZARD EVALUATION

The handling of reactor safety questions is in the process of evolution, which in considerable part reflects the changing nature of the AEC responsibilities under the act of 1946 and the act of 1954. The Commission's traditional public health and safety obligations under the Government-directed program of reactor development for military and industrial purposes led to the establishment of a succession of advisory committees on reactor safeguards.[2] In 1947, when the AEC began its operations the Reactor Safeguard Committee was established as an advisory committee of recognized experts, to provide the AEC with independent evaluation of the hazard aspects of existing reactors, as well as plans for new reactors.

In 1950, a second Advisory Committee on Reactor Locations Problems was appointed. This Committee undertook to study sites of Government reactors and to evaluate environmental factors of reactor hazards. Thereafter, in July 1953, the two advisory Committees were consolidated into the present Advisory Committee on Reactor Safeguards. This Committee, which is appointed under the authority of section 161a of the act, consists of outstanding experts, presently 12 in number.[3] It was set up to review safety studies

[1] See Introduction, p. 1.

[2] See AEC letter of January 4, 1957, to Joint Committee, sec. (b) reprinted as appendix 5.

[3] The membership of the present Advisory Committee, as reprinted at pp. 268–269 of the AEC 21st Semiannual Report, is as follows:

Dr. C. Rogers McCullough, Chairman; Deputy Director for Hazards Evaluation, Division of Civilian Applications, AEC, Washington, D. C.

Dr. Manson Benedict, professor of chemical engineering, Massachusetts Institute of Technology, Cambridge, Mass.

Dr. Willard P. Conner, manager, physics division, research department, Hercules Powder Co., Wilmington, Del.

Dr. R. L. Doan, manager, atomic energy division, Phillips Petroleum Co., Idaho Falls, Idaho.

Dr. Hymer Friedell, atomic energy research project, Western Reserve University, Cleveland, Ohio.

Dr. I. B. Johns, Monsanto Chemical Co., Everett, Mass.

referred to it by the AEC staff and to advise the Commission with regard to the hazards of proposed or existing reactor facilities and the adequacy of proposed reactor safety standards. The Advisory Committee reports directly to the General Manager, in whose office it has a full-time executive secretary.

In 1954, following passage of the new act, the AEC anticipated a great increase in the number of reactors to be built, both by the Government and by private industry. It was felt that the AEC should not continue to rely solely upon part-time advisers, and therefore, early in 1955 there was established within the Commission a full-time reactor hazards evaluation staff. Initially, this group reported directly to the General Manager. In mid-1955, this staff was transferred from the General Manager's Office to the Division of Civilian Application because of the importance of health and safety factors in the licensing program. Organizationally, this Division has responsibility for the hazard evaluation of all reactors, both Government owned and privately licensed, and of all other licensed facilities. The Chairman of the Advisory Committee, Dr. McCullough, became a full-time AEC employee in September 1956 as Deputy Director for Hazards Evaluation in the Civilian Application Division.

The AEC also decided that the function of the Advisory Committee on Reactor Safeguards should be changed over a period of time so that, except in special cases, the Advisory Committee would come to concern itself more with the establishment of across-the-board standards and guides, rather than with the evaluation of specific applications.[4]

At present, the Commission is in a transition period, while a full-time technical staff is being developed. During this period the Advisory Committee on Reactor Safeguards is continuing to consider selected license applications involving large power and testing reactors and others with unusual features. The AEC staff is attempting to assist the Advisory Committee by doing the groundwork and getting the applications in relatively complete form before submitting them to the Committee.

CURRENT HAZARD EVALUATION PROCEDURES

Following the passage of the act of 1954, the Commission issued regulations and developed procedures to deal with the questions of reactor safety. The regulations on the licensing of facilities, as they relate to questions of safety, do not yet contain overall standards, codes, and criteria to be applied by the Commission in determining reactor safety and location. They do describe the required contents of an application for a class 104 license, including the so-called hazards summary report.[5]

This report should contain a sufficiently detailed description of the reactor and of the various processes to be performed to permit an

Dr. Mark H. Mills, radiation laboratory, University of California, Livermore, Calif.
K. R. Osborn, manager of industrial development, general chemical division, Allied Chemical & Dye Corp., New York, N. Y.
D. A. Rogers, manager, central engineering, Allied Chemical & Dye Corp., Morristown, N. J.
Reuel C. Stratton, director, department of research, engineering and loss control, the Travelers Insurance Cos. of Hartford, Conn.
Dr. Abel Wolman, head, department of sanitary engineering and water resources, the Johns Hopkins University, Baltimore, Md.
Dr. Harry Wexler, Director of Meteorological Research, U. S. Weather Bureau, Department of Commerce, Washington, D. C.
J. Z. Holland, secretary, AEC, Washington, D. C.

[4] See AEC letter of January 4, 1957 to Joint Committee, appendix 5.
[5] See AEC Regulations secs. 50.33 and 50.34, reprinted in appendix 3, pp. 94–96.

evaluation of the radioactive hazards involved. It should also include a description of the site, of safeguard procedures in the operation of the facility, and of measures provided to minimize damage if an accident creating radiactive hazards should occur.

In practice, at this stage of the licensing program, the AEC staff and the applicant work closely together in the development and evaluation of the hazards summary report.[6] Emphasis is placed on the applicant's responsibility for reactor safety, and its responsibility to make the basic hazards study and evaluation of reactor design. Thereafter, a preliminary hazard report is submitted as part of the formal license application. This report sets forth the applicant's findings, which should include his opinion as to the events that could take place in the reactor resulting in the release of radioactive material, his judgment as to the adequacy of the countermeasures adopted to minimize the probability of such an event, and his conclusions as to the effectiveness of containment and isolation in minimizing the effects if such an event should occur.

At this point, the Commission's staff reviews the reports, holds further informal meetings with the applicant, and discusses the safety aspects of the reactor in some cases with its advisers, the Advisory Committee on Reactor Safeguards (ACRS). In most cases considered to date, the specific advice and recommendations of the ACRS have been sought and a report provided, in addition to the more informal discussions that may take place at any time between the Commission and the ACRS while the application is being processed.

The regulations provide that in cases where the applicant is not yet in the position to supply all of the technical information required, the Commission may issue a construction permit on a provisional basis, pending the submission of further information, if the Commission is satisfied that the available information provides reasonable assurance that a facility of the general type proposed could be constructed and operated at the site without undue risk to the health and safety of the public.[7]

SAFETY REPORTS

The evolution in the handling of issues of reactor safety is paralleled by an evolution in the handling of reactor safety reports. Pursuant to AEC regulations, the applicant's hazard summary report and other nonclassified documents submitted in connection with the application are made a matter of public record available in the Commission's document room.[8] A report of the ACRS was prepared on each of the early applications, and then submitted to the Commission. It was not, however, made public.

The Commission's handling of reactor safety and the disclosure of safety reports was brought into question in mid-1956 by the issuance of the construction permit to the Power Reactor Development Co.

[6] See appendix 4C, AEC report entitled "Division of Civilian Application Responsibilities and Objectives with Respect to Reactor Hazards."

The term "the applicant" is used throughout here, but it should be noted that the Hazards Summary Report is generally prepared by the reactor-equipment manufacturer rather than by the utility company or group which executes the application in the usual case. Similarly, it is the equipment manufacturer employees who generally carry on much of the preliminary technical discussions with AEC staff personnel.

[7] Sec. 50.35, reprinted in appendix 3.

[8] See AEC Regulations, secs. 50.39 and 2.790, reprinted in appendix 3, and also pt. 9 as to matters of record in the Public Document Room, excerpts of which are reprinted in appendix 3

(PRDC). In that case, a provisional construction permit was issued [9] despite the fact that the ACRS, in its report to the AEC on this application, had raised substantial questions as to the advisability of authorizing construction while significant areas of uncertainty existed as to the safety of the proposed reactor.[10] The Chairman of the Joint Committee, prior to the issuance of the construction permit, indicated to the AEC that he believed the report should be made public.[11]

Excerpts of this ACRS report were made public when released through channels outside the AEC and JCAE, prior to the Commission's action to grant the permit. In October 1956, at the time of granting the motion to intervene in the PRDC proceeding, the Commission did release the report in its entirety. It was indicated, however, that this action was not to be considered as a precedent and that the ACRS report was released only because a copy had previously been furnished the applicant. Also in the fall, the Commission made available to the Joint Committee copies of AEC staff reports by the hazard evaluation staff on the PRDC application and two previous applications. These reports contained a detailed analysis of the issues affecting reactor safety. The report of the ACRS in the PRDC case and the staff report in that case are presented in appendixes 8 and 9.

The preparation of Hazard Evaluation Reports by the Commission's permanent technical staff proved to be a stepping stone to the development of a regular Commission procedure. In the recent Notices of Proposed Action issued by the Commission in connection with the research reactor at Princeton and the Westinghouse test reactor, the notices were accompanied by a memorandum of the Division of Civilian Application, containing a similar type of hazard evaluation prepared by the AEC technical staff.[12] The Commission stated in a letter of January 4, 1957, to the Joint Committee [13] that it intended to follow this practice of publishing such a memorandum in the future at the time of issuance of notices of proposed action, and would formalize this procedure shortly, by amendment to the Commission's Rules of Practice (10 C. F. R., pt. 2). The Commission has taken the position, however, that those changes would not affect its practice of withholding from publication the reports of the ACRS.

NEED FOR OBJECTIVE EVALUATION OF HAZARD

As the Commission's hazard evaluation staff becomes organized, as its reports are made part of the public record prior to the issuance of a construction permit, one may consider whether this evolving organization and procedure provides adequate assurance that the public health and safety will be adequately protected in the conduct of the private program of power development, whether there is adequate opportunity in a given case for affected parties to be apprised of the hazard and to secure an objective and informed review of reactor safety, and whether fairness to applicants and all others is assured.

[9] The construction permit and other documents are reprinted in appendix 7.
[10] The report of the Advisory Committee, dated June 6, 1956, and made public October 9, 1956, is reprinted as appendix 8.
[11] See correspondence between Joint Committee and AEC in appendix 6.
[12] For the memorandum issued in connection with the application for a proposed research reactor near Princeton, N. J., see appendix 14.
[13] Reprinted as appendix 5.

Two related questions are posed: The need for objective evaluation by outside experts, and the need for publication of such reports.

As long as the responsibility for reactor safety is shared by the AEC on the one hand, and industry on the other, one can conceive of several factors which could contribute to something less than maximum public protection. It is unlikely that these factors would affect the objectivity of hazard evaluation by the AEC or private industry, respectively, because there is a profound community of interest on the part of the two groups to do everything possible to minimize the risk of reactor accidents. These factors, however, need to be identified.

On the part of the Government, considerations of promoting new reactor designs by private industry might lead to Government approval of a reactor design at a stage of development and at a location that it would not have chosen, for safety reasons, if the program had been under Government direction. It is also conceivable that industry, in the competitive pursuit of commercial power, might unconsciously be led to reduce its safety precautions below the maximum, in an effort to reduce the cost of atomic power production. An additional factor that could contribute to less than total detachment on the issue of reactor safety is a possible byproduct of the seemingly desirable close working cooperation between the AEC technical staff and the applicant, in the preparation of a hazard summary report. This cooperative process could result in an identification of the AEC staff with the hazard analysis of the applicant, which could interfere with its independent appraisal.

POSSIBLE CHANGES IN AEC ORGANIZATION AND PROCEDURE

The question remains, therefore, whether the contribution of a detached and objective body of experts whose report would be made part of the public record, would provide a still greater measure of protection as a temporary device during this period of experimental development.

1. *A separate division of reactor safety.*—Detachment might be emphasized by an organizational separation of the Division of Civilian Application's Hazard Evaluation Staff, and its establishment as a separate division. Its sole concern would be with reactor safety in the government and both private program. In the latter, a report by this Division would be made a part of the public record of the licensing proceeding. The Division of Reactor Safety would be comparable to the present Division of Security, whose concern is with personnel and physical security. The merits of this and other organizational changes within the AEC are examined in part IV below.

2. *Reference to a separate agency.*—Apart from organizational changes within the Commission, other possible measures of further assuring an objective evaluation of reactor safety include the authorization of a Government agency, outside the AEC, to pass on the safety of reactor design and location.

Some analogy on the separation of the AEC safety function is found in the field of aviation. There, the Civil Aeronautics Board is responsible for economic regulation of the airlines, including the issuance of certificates of public convenience and necessity. The CAB is also responsible for the promulgation of safety regulations and the conduct

of accident investigations. It is the Civil Aeronautics Authority (within the Department of Commerce), however, that is responsible for the certification of airworthiness of individual aircraft designs.

This arrangement is the result of a complicated evolutionary process. It is not necessarily an appropriate guide for the atomic field, except as an illustration of the separation that is possible of the functions of safety regulation, safety certification, and accident investigation. Unless there is a major organizational separation of the AEC into a regulatory body and an operational agency, however (see pt. IV below) no appropriately expert governmental body for passing on reactor safeguards and reactor location would seem to be presently available.

THE ROLE OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

The area of principal concern in this second inquiry, both in terms of providing detached and expert evaluation of matters of reactor safety, and in terms of providing publicity to that evaluation, relates to the appropriate role of an expert advisory body such as the ACRS.

That committee, and its predecessors, have had an historic role of importance since 1947, in providing the Commission with formal and informal expert guidance. Membership on this and earlier committees has had considerable continuity, with valuable service rendered by the comparatively small number of experts adequately qualified to advise the Commission in this highly complex field.

That their role should change with changing circumstances is logical; that the number of reactor facilities to be appraised in terms of hazard, should lead to the development of a full-time permanent technical staff within the Commission is also logical. The question remains whether the role of the ACRS in providing an independent review of the design and location of new large scale power reactors should be maintained and formalized by statute, during this developmental period, and whether a report by this committee should be prepared in each such instance for publication, as part of the licensing process.

The Commission has taken the position that the Advisory Committee should continue to advise the Commission in only a limited number of license applications where the technical staff determines that additional advice is desirable. The AEC has expressed concern that a formalization and an enlargement of this role by statute or regulation might overburden the committee and reduce its value as a body of experts to whom the AEC could turn on an informal, close, and continuing basis. Furthermore, it was felt that this added responsibility would keep the ACRS from its urgent assignment of developing overall standards and criteria for reactor license applications.

The AEC has equally opposed a requirement that future reports of that committee should be published as part of the public record in a licensing proceeding. These reports have been considered by the AEC as part of the internal working papers of the executive branch of the Government which should not be made available to the Congress or the public in the course of a quasi-judicial initial licensing proceeding.[14]

[14] See appendix 6.

The AEC has further pointed out that the reports prepared for the Commission in the three applications for construction permit cases for large scale reactors in 1956 did not purport to be self-contained documents, prepared for publication. Rather, they were said to be advisory remarks designed for the guidance of technical persons, familiar with a large body of technical problems unstated in the reports. The Commission indicated that to require the publication of such papers would tend to "inhibit" the Commission's "source of advice," and that it would be an unwise precedent to subject documents of employees or consultants, such as these, to contemporaneous scrutiny by Congress and the public.

The principal argument in favor of a formalization of the role of the ACRS in licensing proceedings has already been stated as one in favor of increased use of the most expert disinterested opinion available on the question of reactor safety during the developmental period. Indicative of the Committee's importance is the statement of a leader in the insurance industry that the continuation of such a group was an integral component of the success of the program to promote private insurance for the reactor industry.[15]

Reports have been prepared by the ACRS for the AEC on major construction permit applications in the past, without interfering with close working relationships with the Commission. Advice has been requested and received, both of an informal continuing nature and as a specific judgment on the safety of reactor design and location. It is not likely that such applications for large-scale reactors or reactors of new design will prove so numerous in the immediate future, as to occupy a much greater projection of the Committee's time.

Even if the quantity does increase, the developing hazard evaluation staff can do much to reduce the load on the ACRS by taking over the major share of the groundwork and then submitting the application to the ACRS in substantially final form.

In addition to this timesaving device, action might be taken consistent with the design of section 106 of the act,[16] to classify reactors by types and to limit accordingly the categories of license applications which required review by the ACRS. They might include only large scale power reactors, for example, or reactors for research or power, which are of advanced design, not yet well proven in operation.

A further way of limiting the burden might be to have an appraisal and a public report by the ACRS only at the request of the AEC, or on the motion of one of the interested parties. A final possibility would be to have the ACRS act as a review board, comparable to the Personnel Security Review Board. Reference to the ACRS might then occur only after the Commission has taken initial action and prior to final determination.

PUBLICATION

It has been noted that the Commission has raised a number of points of law, policy and practice in opposing required publication of

[15] See address, Problems of Public Liability Insurance on Nuclear Risks, by Hubert W. Yount, vice president, Liberty Mutual Insurance Co., reprinted in Atomic Industrial Forum, Inc., report, Management, Economics and Technology for the Atomic Industry (September 1956), at p. 94:

"We have felt that an integral component of the success of this program is the continuation of a strong impartial technical advisory group, such as the Advisory Committee on Reactor Safeguards, and we have so reported to the Commission. The atomic arts are so new that it appears imperative to hold maximum safety as the first requirement to consistent and long-range progress."

[16] Reprinted in appendix 1.

ACRS reports. As to its position that these reports are internal working papers, there would seem to be a distinction between a report of an independent advisory group of experts and the memoranda prepared by the working staff of the AEC. The rationale of having such an advisory committee is that it is valuable to obtain a disinterested appraisal by experts outside the Commission. If there is value to the Commission in having such an evaluation, there is equal value in having such evaluation available to others. If the Government should undertake an indemnity program up to $500 million under the proposed indemnity bills, it, too, would possess an additional reason for obtaining all possible information and evaluation of safety of a licensed facility.[17]

With reference to AEC arguments against publishing reports of the ACRS, because they are shorthand, non-self-contained documents, designed for experts, the additional burden of a report prepared for publication does not seem very great. The foundation for the report would necessarily be laid in the process of making the hazard evaluation and the requirement of a public recapitulation should not be oppressive.

In terms of the effect of publication on inhibiting the Commission's sources of advice, one would suppose that the ACRS would not have written differently in substance if it had known its report would be published. Public or private, such an advisory report would not be binding on the AEC. It would merely become a part of the public rather than the private record, upon the basis of which the Commission would reach its determination as to safety. In the event of a hearing, it could constitute a proper basis for cross-examination on the points in issue.

If continued reliance were to be placed on the appraisal of power reactor facilities by the ACRS, it might well be made a special statutory committee by amendment to the Act defining its composition and functions and defining the occasions on which an application should be reviewed by the Committee and a public report issued.

There is no reason to believe that such a provision would be inconsistent with the development of the full time hazard evaluation staff within the Commission. It would simply make available the additional advice of an objective group of experts during the developmental period.

AD HOC ADVISORY COMMITTEES

A variant of having a continuing expert body such as the ACRS, would be to provide for the appointment of an ad hoc committee of experts in individual cases. This is the procedure in the Food and Drug Administration under the Miller Pesticide Act.[18] Arrangement

[17] H. R. 1981 (Mr. Price) and S. 715 (Senator Anderson), 85th Cong., 1st sess. See note 9 on p. 5.

[18] 52 Stat. 1040 (1938), 21 U. S. C. 301 at 346a (g) providing:

"Whenever the referral of a petition or proposal to an advisory committee is requested under this section, or the Secretary otherwise deems such referral necessary, the Secretary shall forthwith appoint a committee of competent experts to review the petition or proposal and to make a report and recommendations thereon. Each such advisory committee shall be composed of experts, qualified in the subject matter of the petition and of adequately diversified professional background selected by the National Academy of Sciences and shall include one or more representatives from land-grant colleges. The size of the committee shall be determined by the Secretary. Members of an advisory committee shall receive as compensation for their services a reasonable per diem, which the Secretary shall by rules and regulations prescribe, for time actually spent in the work of the committee, and shall in addition be reimbursed for their necessary traveling and subsistence expenses while so serving away from their places of residence. The members shall not be subject to any other provisions of law regarding the appointment and compensation of employees of the United States. The Secretary shall furnish the committee with adequate clerical and other assistance, and shall by rules and regulations prescribe the procedure to be followed by the committee."

is authorized by statute for the FDA to request the National Academy of Sciences to select a panel of qualified experts, who would produce a report on a particular issue of toxicity, etc., which is then made part of the record of the certification proceeding.

One drawback of this device in the atomic field is the limited number of experts trained in reactor safety. Another is that the Commission and the public would not receive the benefit or the judgment of a body such as the ACRS whose members have accumulated a familiarity and experience from considering AEC reactor safeguard problems over a period of years. On balance, it would be preferable to establish a single permanent advisory body in the atomic energy field.

PART IV. SEPARATION OF AEC LICENSING FUNCTIONS

The third problem raised by Senator Anderson's letter of August 9, 1956, to Mr. Strauss (see Introduction, p. 1) was whether the functions of the Commission in the licensing of atomic activities should be more sharply separated from its other functions under the act.

As in the case of the first two of Senator Anderson's questions on public hearings and public safety reports, the major objective here would be that of securing a nondiscriminatory, objective system of facilities licensing, as a means of assuring an uninfluenced evaluation of reactor safety and a quasi-judicial framework for the regulation of the new industry. Specifically to be considered is the question of whether a sharper separation of the Commission's licensing function than now exists would contribute to these ends, and at the same time would not interfere with the effective conduct of the atomic energy development program.

GENERAL TYPES OF SEPARATION

In speaking of "separation of functions" in an administrative agency, one may be concerned with any one of three concepts: First, there is the separation of the regulatory function from other functions of development, promotion, and operation.[1] Secondly, within the regulatory process, there is a differentiation made between rulemaking and adjudicatory functions.[2] Finally, within the adjudicatory process, there is the still further separation of "judging" from "investigating and prosecuting" functions.[3]

In the case of the AEC, the latter two types of "separation" do have bearing on the goal of obtaining objectivity in a licensing proceeding unaffected by any inconsistent considerations. However, because of the Commission's many additional nonregulatory responsibilities under the act, it is the larger separation of the Commission's regulatory activities from its operational and promotional responsibilities that is of principal concern in this study.

Licensing is primarily an adjudicatory process, but whether a separated licensing unit should also be granted rulemaking, investigative, or prosecuting authority depends upon the degree and extent of separation desired. If a separated unit should be established with all these types of authority, some further separation within the unit of the "judging" from the "investigative and prosecuting" functions would normally be required.

[1] As discussed in the Introduction, the Commission has responsibilities under the act for research and development, including reactor development, and it uses Government funds to advance the art through contracts with private industry. Thus the Commission may be developing a promising reactor concept and, at the same time, be considering an application from a private industrial concern for the same type of design. From a technology viewpoint, therefore, the Commission may be sponsoring one firm through contract which is "competing" with another firm which the Commission licenses and regulates.

[2] Thus the Administrative Procedure Act and most agency statutes establish different procedures for rulemaking and adjudicatory processes. See Administrative Procedure Act, secs. 4 and 5, and AEC Regulations, pt. 2.

[3] This is the type of separation attempted by sec. 5 (c) of the Administrative Procedure Act and by certain agency separations as discussed, infra.

SEPARATION OF FUNCTIONS IN THE AEC'S ADMINISTRATION OF THE ACT

Under the act of 1954, the AEC assumed its multiple responsibilities with little statutory guidance as to separation of functions. In administering the act, the Commission's organization and allocation of responsibility provides for a partial but not a complete internal separation of functions. There is some overlapping of functions in each of the three divisions principally involved as indicated by the description in part I of this study.

While the function of the Division of Civilian Application is preponderantly regulatory, many of its activities, especially those of the Commercial Development Branch and the Materials and Service Branch are promotional in nature. Thus the Division director who issues facility licenses also is responsible for developing programs to encourage private participation in the program.[4] The Reactor Development Division, while it has the primary operational or "developmental" function for Government-directed reactor research activities, also has a role in the regulated program in that it provides advice to the Division of Civilian Application on the technical merits of a proposed facility. Furthermore, this division is responsible for the negotiation of contracts of assistance with licensees in the power demonstration reactor program. Similarly, the Inspection Division has inspection responsibility both as to licensees and as to the activities of the AEC and its contractors.

Thus, at the present time, it can be said that the Commission has established an organization and has allocated responsibility among its divisions in a way that is tailored to the demands of the present state of the atomic power program, in which the regulatory work is comparatively light, and is substantially interrelated with the developmental and promotional programs. The Commission has not attempted to establish, even at the division level, a separated "regulating" unit, in anticipation of the increasing work and important duties which such a unit might perform in the future in regulating a mature atomic industry.

SEPARATION OF AEC STAFF IN PRDC HEARING

The Commission has taken some further steps on an ad hoc basis to secure an internal separation of functions in adjudicatory proceedings. The Commission informed the Joint Committee by letter dated December 12, 1956, that it was establishing a "separated staff" for use in the hearing on the application of Power Reactor Development Co. (PRDC) for a construction permit.[5] The Commission's purpose was to separate staff members participating in the hearing from all other staff members who were left free to advise the Commissioners in "judging" the ultimate decision in the case. This type of limited separation of the "judging" function was of the type provided by section 5 (c) of the Administrative Procedure Act. Although that subsection does not apply to initial licensing cases, the legislative history indicates that the Senate Judiciary Committee report recommended that it should apply in cases involving "sharply controverted factual issues." [6]

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[4] See description of functions of the Licensing Branch and the Commercial Development Branch, note 13 at p. 14 supra, and in appendix 11A.

[5] The letter is reprinted in appendix 11B.

[6] S. Rept. 248, 79th Cong., 2d sess., Legislative History of the Administrative Procedure Act, at p. 204.

The separation of the "judging" function in the PRDC case was of a limited nature, however, and only applied to staff advisers, because the Commission did not delegate to the hearing examiner any power to make an initial decision, but retained all "judging" authority and responsibility itself.[7]

SEPARATION OF FUNCTIONS IN FEDERAL AGENCIES, GENERAL

Before considering further the problem of separating the functions of the AEC, reference should be made to the relevant studies of the general problem in the field of administrative law and to prominent illustrations of separation of functions in the case of individual agencies.

The problem of separation of functions in Federal agencies has been considered many times, dating back to the establishment of the first regulatory Commission, the Interstate Commerce Commission, in 1887. Professor Cushman in his 1941 treatise, The Independent Regulatory Commissions, describes the basic issues as follows:

> In most of the independent regulatory commissions, important quasi-judicial work in which private rights are directly affected is supplemented by the responsibility of making broad policy decisions and carrying on administrative activities of a general nature. It is believed by many that the accomplishment of these two kinds of duties in the hands of the same agency tends to destroy the atmosphere of neutrality and detachment in which the work of the adjudication ought to be carried on * * *. It is urged, therefore, that policy determination and adjudication ought to be kept as far apart as possible.[8]

The President's Committee on Administrative Management (1937)

The President's Committee on Administrative Management, sometimes called the Brownlow committee, recommended in 1937 separation of functions by dividing agencies into an "administrative section" and a "judicial section." The administrative section would carry out all executive and operational duties and would be under the authority of an executive department secretary and, in turn, the President. The judicial section would be under the direction of a board, whose members would be removable only for cause stated in the statute.[9]

The Administrative Procedure Act and the Hoover Commission Reports

Principal attention in recent years has been devoted to the issue of separation of "judge" and "prosecutor" in quasi-judicial proceedings, with the objective that those engaged in the performance of investigative and prosecuting functions should not advise or participate in the decision. The Administrative Procedure Act of 1946 provided accordingly for a limited internal separation of functions but excluded initial licensing proceedings from this requirement.[10] Preceding the act had

[7] The hearing examiner appointed by the AEC was instructed to certify the entire record to the Commission for decision. See AEC order of October 8, 1956, appendix 7D. This alternative procedure is permitted by section 7 of the Administrative Procedure Act. The Commission's reluctance to permit the hearing examiner to make an initial decision is understandable, since he had no previous background in atomic energy matters, but it points up the need for qualified hearing examiners who are conversant with the Atomic Energy Act, AEC regulations, and atomic energy technology.

[8] Cushman, The Independent Regulatory Commissions (1941), at pp. 699–700.

[9] The proposals of the Brownlow committee are discussed in Cushman, note 8, at pp. 708–712.

[10] The Administrative Procedure Act, sec. 5 (c), 5 U. S. C., sec. 1004 (c).

been an exhaustive study by a special committee of experts appointed by the Attorney General which had made its report in 1941. The majority of the Committee had recommended independent hearing examiners to hear the evidence and make the initial findings of fact and the initial order in quasi-judicial proceedings. The minority of the Committee, on the other hand, had urged complete separation of functions whenever possible by establishment of separate agencies.[11]

The second Hoover Commission report of 1955 recommended the extension of internal separation of functions to initial licensing, and the creation of a single independent administrative court, but with jurisdiction presently limited to the field of trade regulation and taxation. The general objectives of greater separation were there stated to be (1) to prevent "the contamination of judging by other inconsistent functions"; and (2) to "maintain the integrity of, and public confidence in, case adjudication affecting private rights." [12]

SEPARATION OF FUNCTIONS—PARTICULAR AGENCIES

The problem of separating regulatory from other functions has been considered in the statutes of several agencies which have responsibilities somewhat comparable to those of the AEC. Any attempt to borrow complete ready-made concepts from another agency must be approached with caution, however, because of the special problems in the atomic energy program, discussed later in this section.

Aeronautics

The Civil Aeronautics Board and the Civil Aeronautics Administration present an example of separation that illustrates the complexities of the problem in the administration of a statute with multiple objectives. In the Civil Aeronautics Act of 1938, the policy considerations included: (*a*) Developing and encouraging an air transportation system adequate to the present and future needs of the foreign and domestic commerce of the United States, the postal service, and the national defense; and (*b*) regulating air commerce in such manner that the public might be assured of the maintenance of high standards of safety.[13]

As presently organized, the Board is composed of five members, appointed by the President with the confirmation of the Senate. Among the principal functions of the CAB are: (1) Regulation of the economic aspects of United States air carrier operation, both domestic and international; (2) promulgation of safety standards in the form of civil air regulations; (3) investigation and analysis of aircraft accidents; (4) cooperation and assistance in the establishment and development of international air transportation.[14]

The Administrator, who exercises his functions under the direction and supervision of the Secretary of Commerce, is responsible for the

[11] See Administrative Procedure in Government Agencies, S. Doc. No. 8, 77th Cong., 1st sess., at pp. 55–60, for majority opinion, and pp. 203–209 for minority opinion.

[12] Commission on Organization of the Executive Branch of the Government (1955), Task Force Report on Legal Services and Procedures, at p. 176. Concerning the exceptions, to the separation of functions requirements of sec. 5 (c) the task force report said at p. 182:

"The present exception of initial licensing, ratemaking, the regulation of facilities and practices of public utilities and carriers, and agency exercise of rulemaking functions should be removed. *If Congress determines by statute that the exercise of an agency function must be made after a formal hearing, then the safeguards of such procedure should not be diluted by exceptions under sec. 5 (c) of the Administrative Procedure Act.*" [Italic added.]

[13] The Civil Aeronautics Act (52 Stat. 973, 49 U. S. C. 401) and Reorganization Plans III and IV, effective June 30, 1950, issued pursuant to the Reorganization Act of 1939 (53 Stat. 561, 5 U. S. C. 133) established the present organization and allocation of responsibilities.

[14] See United States Government Organization Manual, 1956–57, at pp. 353–355.

enforcement of the civil air regulations pertaining to safety as prescribed by the CAB. The Administrator also provides assistance in developing airports, air navigation aids, and traffic control systems, promulgates aviation information, promotes air commerce abroad, and has certain functions in connection with civil aviation defense requirements.[15]

The establishment of two separate bodies in the aviation field, one as an independent regulatory body and the other in an Executive Department provides an illustration of a comprehensive external separation of functions. However the guidance it provides for the field of atomic energy is not clear, except perhaps in the field of aircraft safety as discussed in part III. The CAB is not simply a regulatory body, but an agency engaged in developing air transportation, in subsidizing individual airlines, and in meeting the needs of the postal service and the national defense. Next to the AEC it is perhaps the administrative agency with the widest and most complex range of responsibility. Therefore, the CAB cannot be considered an example of the isolation of the regulatory function uninfluenced by nonregulatory considerations, because the Board itself continues to carry out promotional as well as regulatory functions.

Shipping

In the maritime field, the establishment of the Maritime Board and the Maritime Administration has achieved only a limited separation of functions at present because the Chairman of the Board also serves ex officio as the Administrator.[16] The Board is supposedly an independent 3-man body while the Administrator is an officer within the Department of Commerce. Perhaps the most interesting analogy here for possible comparison with the atomic energy field is the separation of functions as applied to the grant of contracts for ship construction and operating subsidies intended to permit the American merchant marine to compete with foreign operators. The Administrator is responsible for investigating and determining ocean services, routes, and lines essential to United States interests, and makes recommendations to the Board which grants both construction and operation subsidy contracts.

Also of interest in the maritime field is the fact that influential interdepartmental advice is received by the Maritime Board from the Department of Defense concerning requirements for national defense purposes before subsidies are awarded.[17]

Communications

The Federal Communications Commission is of interest in this section primarily as an illustration of an extensive effort to provide an internal separation of prosecutor and judge in adjudicatory pro-

[15] Idem, at pp. 276-278. For further discussion of separation of functions between the CAA and CAB, see appendix 16.

[16] See quotation from United States Government Organization Manual, in note 44 of appendix 16. at p. 214, *infra*.

[17] For further and more detailed discussion of maritime separation of functions, see appendix 16.

ceedings.[18] This objective is pursued by grouping much of the FCC staff into operating bureaus, and by establishing a group of offices insulated from these operating bureaus: the Office of Hearing Examiners; the Office of General Counsel; the Office of the Chief Engineer; and the Office of Opinions and Review. The licensing process involves a series of separate steps performed at one level by the hearing examiner, at another by the Office of Opinions and Review and finally by the Commission itself. In this process there is no doubt a separation of "judge" and "prosecutor" functions, but also considerable overlapping of functions, since in some cases the record may be reviewed by five separate offices.

Features of the FCC organization are relevant to a consideration of the AEC separation of staff in the PRDC case. In view of the prominence of technical questions of reactor safety, however, it should be observed that the FCC structure would require duplication of scarce scientific and technical personnel.[19]

SPECIAL PROBLEMS IN THE ATOMIC ENERGY PROGRAM

The appropriateness of analysis of separation in other Federal agencies to the AEC is further qualified by a number of special problems in the atomic energy program affecting the feasibility of separation.

An essential characteristic of all devices attempting to achieve a substantial separation of the regulatory function is that the units must be largely self-sufficient. Internally or externally, this may lead to some duplication of function among the respective divisions or self-sufficient agencies, unless the operational and promotional activities have little in common with the separated regulatory ones. In the case of the AEC, it should be observed at the outset, that the existence of parallel and similar Government and private atomic power development programs accentuates the problem of duplication and of separation of function. Both programs involve the construction and operation of reactor facilities; both involve considerations of safety and of security. The creation of a separate body to regulate the private program would require a staff of technical and other personnel engaged in activities very similar to those performed by their counterparts in the Government program. Moreover at some level within the Government there are during this developmental period strong reasons for coordination of effort if the Government and the private programs are effectively to complement each other in the attainment of the goal of economic atomic power.

The Commission's establishment of the power demonstration reactor program has tended to accentuate the interrelation of the two programs as the PRDC case has illustrated. For example, an issue which the ACRS and the Division of Civilian Application took into

[18] "Congress took note of the inadequacy of the present separation of functions under the Administrative Procedure Act when it enacted the Communications Act of 1952. Under that legislation, members of the agency must utilize a special review staff consisting of lawyers, engineers, and other experts and may not consult with staff members who participate in the adjudication of a case below, 47 U. S. C., sec. 155 (c) (1952). Each Commissioner may appoint legal, engineering, and administrative assistants, 47 U. S. C., sec. 154 (f) (2) (1952). The statute expressly forbids persons engaged in the performance of investigatory or prosecuting functions from advising, consulting, or participating in any case of adjudication under the Administrative Procedure Act, the provisions of which are expressly superseded where inconsistent with those of the 1952 act, 47 U. S. C., sec. 409 (c) (3) and (d) (1952)" (Commission on Organization of the Executive Branch of the Government, Task Force Report of Legal Services and Procedure, at p. 180 (March 1955)).

[19] For further and more detailed discussion of the separation of functions required by the Communications Act, see appendix 16.

account in its hazard evaluation of the facility was whether the Commission should accelerate its Government-directed program in fast breeder reactors in order to produce sufficient additional information of an experimental nature to provide reasonable assurance to the Commission that the necessary data on the safety of PRDC facility would be available within the timetable for its construction and operation.

Such interdependence of Government-directed and Government-regulated programs in the area of reactor safety is a limiting factor to the extent of separation that is presently feasible of the licensing process in the atomic field. Moreover, the existence of this hybrid of Government-directed and private activity would complicate the theoretically more feasible separation of function that might be applied to the licensing of the independent industrial program.

A basic consideration operating in favor of a sharp separation of function is that of reactor safety. The evaluation of reactor safety would seem properly to be a process of a purely regulatory nature, in which no promotional considerations should play a part. As with public hearings and public safety reports, a separation of this function would be designed to contribute further to the maintenance of total objectivity on safety questions.

Moreover, a separate licensing group removed from promotional responsibilities should tend to allay suspicions of competing applicants and the public in the event of contested license applications.

Finally, it should be noted that the industry has tremendous potential for future growth, and it might be indicated that since a separate licensing body may be needed in the future, a decisive first step should be taken at an early date before the Commission builds up a large organization with thoroughly intermingled promotional and regulatory functions.

POSSIBILITIES FOR GREATER SEPARATION OF REGULATORY FUNCTION

Numerous organizational changes could be devised to create a sharper separation of the regulatory process of licensing private atomic activity. Most of them fall into three general categories. At one end of the scale of possibilities would be the creation of a separate agency with full authority to regulate private atomic activity. At the other end of the scale would be a proposal that would require no change in AEC organization. It would, however, more sharply allocate the regulatory responsibility to one or more separate units, such as the Division of Civilian Application or a new Division of Licensing, and would make this regulatory group more self-sufficient, and its operations more sharply divorced from the operational and promotional part of the Commission's program.

A third and middle course would involve an internal reorganization of the AEC to create a separate regulatory body within the agency. Here, too, a wide variety of organizational possibilities suggest themselves from the establishment of one or more "Licensing Commsisioners" at the highest level, to the establishment of a General Manager or Assistant General Manager for Licensing, or the creation of a Licensing Board at one of these levels within the Commission.

SEPARATE AGENCY

If a separate regulatory body should be created, it would presumably require, for effective operation, full authority and responsibility for licensing and regulating the industrial atomic energy industry. Such an agency would issue its own rules and regulations; process applications; grant, deny or modify construction permits and licenses, including the adjudication of contested applications; and conduct license revocation proceedings, in cases suspected of noncompliance. It might also be granted investigatory and inspection authority.

The separated agency would regulate the private atomic energy industry, while the AEC would continue to be responsible for the main operating program, including procurement of raw materials, production of special nuclear materials, manufacture of weapons, and the research and development program. If the civilian atomic power industry should still need Government research and development assistance, it would submit its requests to the AEC for assistance, but would apply to the new agency for a construction permit and license to operate the reactor.

This separation could be achieved by reducing the present number of AEC Commissioners from 5 to 3, and by creating a second commission of 3 members to regulate the atomic industry. The separated agency need not be a large group, nor need it have a heavy workload or large staff, as indicated by the example of the Federal Coal Mine Safety Board of Review.[20]

REGROUPING AT THE AEC DIVISION LEVEL

Without changing the basic organizational structure of the AEC to any great extent, it would be possible to reallocate responsibility among the existing divisions in a way that would more sharply isolate the functions of the division or divisions concerned with the licensing of private atomic activity.

One way would be to take all "promotional" functions from the Division of Civilian Applications and make it solely a Division concerned with regulation and licensing. Encouragement, informational assistance, and promotional activities, to the extent these are presently provided by the Division's Commercial Development Branch and the Materials and Services Branch and others, would be functions assigned to other divisions or to a new division for commercial development.

A further step to separate the licensing function would be to build up a group of qualified hearing examiners, and authorize the examiner to make an initial decision in a licensing proceeding, rather than merely conduct the hearing and certify the record, as is presently being done by an outside examiner in the PRDC case. If the statute

[20] An example of a small, independent, and completely separated agency especially concerned with safety is the Federal Coal Mine Safety Board of Review, established by the Coal Mine Safety Act approved July 16, 1952 (66 Stat. 697; 30 U. S. C. 475). The Board consists of 3 members including a Chairman, appointed by the President by and with the advice and consent of the Senate, to serve terms of 3 years, 1 term expiring each year. The Chairman is required to be a graduate mining engineer with experience in coal mining or to have at least 5 years' experience as a practical coal-mining engineer. The Board has complete rulemaking and adjudicatory authority and obtains its own appropriations from Congress each year. It is a quasi-judicial agency established to hear and determine applications by coal-mine operators for annulment or revision of, or relief from, safety orders issued by Federal coal-mine inspectors. See United States Government Organization Manual, 1956–57, at pp. 371–372. The Board members are not full-time Federal employees but are compensated on a "when actually employed" basis. In 1956 the Board held approximately 23 days of hearings and 6 or 7 separate meetings. The Board has 5 full-time employees, including an Executive Secretary, a General Counsel, and a secretarial and administrative staff of 3 persons

should be amended to require a public hearing on some or all reactor applications, the hearing examiners would serve a useful purpose at a comparatively early date.

The staff of atomic energy hearing examiners could be established as an Office of Hearing Examiners within the AEC organization, similar to the FCC arrangement. Or, they could be made part of a panel of outside examiners under the jurisdiction of the Civil Service Commission, and this might be the preferable alternative, in anticipation of the eventual establishment of an administrative court, which could assume these functions.

Since a principal concern at the moment is with the objective evaluation of reactor safety, another minor rearrangement possibility would be to separate the Hazard Evaluation Staff from the Division of Civilian Application and elevate it to separate division status. As such, it would provide hazard evaluatio ı of licensed facilities and AEC facilities, as it does at present, but its increased stature as a division concerned solely with safety factors in all reactor development might further add to the detachment and weight of its appraisal.

REGULATORY AGENCY WITHIN THE AEC

It is not appropriate in this report to set forth all the possible divisions for pursuing the middle course of creating a greater internal separation of the regulatory function within the AEC.

The basic question to be decided at the outset is whether there should be any individual or group, other than the present body of five Commissioners, with final authority in the licensing of private activity, and, if so, whether the authority so delegated should be strictly of an adjudicatory nature, or should include final rulemaking authority as well.

If both adjudicatory and rulemaking powers should be included, such combined authority in one unit would create an essentially independent agency within the Commission. If this were done, it would add weight to the organizational proposition of having one or more new Commissioners for licensing established at the top level, with its own staff engaged in rulemaking and licensing proceedings, subject to final determination by these licensing Commissioners.

If final adjudication, but not final rulemaking authority, should be possessed by a separate group or individual within the Commission, a General Manager or an Assistant General Manager for Licensing, or a Licensing Board at either of these levels might be indicated. Even if final rulemaking authority should remain with the Commission as presently constituted, separation of function could be achieved by the organization of a regulatory body at the General Manager or Assistant General Manager level. Therefore, for purposes of discussion of the middle course, a possible regulatory unit at the Assistant General Manager's level will be outlined in summary.

Licensing Board at the level of the Assistant General Manager.—A Licensing Board at the Assistant General Manager level could be established within the Commission. This Board would consist of three members who would be recognized experts in the fields of atomic-energy development and reactor safety. They would be appointed by the President by and with the advice and consent of the Senate.[21] The

[21] Under bills introduced by Senator Anderson (S. 4162, S. Rept. 2404) and Mr. Durham (H. R. 12094, H. Rept. 2589) during the 84th Cong., the Assistant General Manager salary level would be $20,000 maximum per year.

Board would have final agency adjudicatory authority in licensing cases, not subject to administrative review by the Commissioners, but subject to judicial review by the courts, as required by section 189 of the act.[22]

The Board would make recommendations concerning rules and regulations in the AEC licensing and regulatory fields, but final rulemaking authority would reside in the five Commissioners, who would continue to issue all AEC regulations. In this way, basic policy and direction to the entire atomic-energy program would still be provided by the five Commissioners, but individual cases would be decided by the Board, with full responsibility for carrying out an objective appraisal of reactor safety and economic considerations.

Qualified hearing examiners, organizationally located under the Board, would make initial decisions on all applications for a construction permit or a facility license where a hearing might be required. The initial decision of the hearing examiner would then be reviewed by the Board, which would publish its decision, modifying or changing the hearing examiner's initial decision, as it saw fit.[23]

If a transition period should be desired, pending the time when the Board should have a substantial workload and merit full responsibility, a temporary device could be used. Rather than a three-member Board, a single position could be established, such as an Assistant General Manager for Licensing. As with the Board, the individual appointed would be a recognized expert in atomic energy and reactor safety, and would be appointed by the President by and with the advice and consent of the Senate.[24] He would review all of the initial decisions and make a determination in each case. When the licensing workload merited, this position could be increased to a three-member Board.[25]

EVALUATION

The evaluation of the merits of the three major categories of organizational changes to increase the separation of the licensing function depends in large part on the weight that is given to a number of conflicting policies and objectives.

A separate agency concerned solely with the regulation of private activity would be likely to maximize objectivity and impartiality, both in reactor safety evaluation, and in making decisions on competing applications. The separate body, however, would also increase the difficulties of coordinating the overall developmental effort, of avoiding duplication of processes, and of reducing redtape and administrative delay at a time when private industry requires Government assistance and service as well as Government regulation. The AEC expressed its opposition to the establishment of a separate agency in a letter to the Joint Committee as follows:

[22] For text of sec. 189, see appendix 1.

[23] For further discussion of the concept of a licensing of appeals board within the AEC, see appendix 16, Policy Considerations, at pp. 215 to 217 of this report.

[24] See note 21 as to contemplated salary level of $20,000 per year.

[25] As an additional possible temporary device, the decisions of the Board (or the Assistant General Manager for Licensing) could be made subject to review by the Commission during the transition period. For example, it could be provided that such decisions would become final (except for court review) after 30 days unless the Commission granted review. Since such a reviewing arrangement would greatly curtail the independence of the adjudicatory board, it should be used if at all for a limited period of time only, with a cut-off date specified in advance, when the Board would achieve full adjudicatory independence. Decentralization of the licensing process from Washington headquarters to AEC field offices might also serve to increase objectivity by having licensing decisions made by persons not connected directly with the promotional program.

> We have examined the desirability of separating the regulatory from the promotional and direct operational functions of the Commission and in connection therewith have considered the possibility of establishing a separate agency with complete responsibility for the regulation of the atomic-energy industry. We have concluded that an amendment to the act establishing a separate agency is not desirable, certainly at the present time.
>
> In reaching this conclusion, we have attached great significance to the need during the period ahead for singleness of administration of the Government's activities in atomic energy, be they regulatory, promotional, or direct operational in nature. Establishment of a separate regulatory agency would divide between two agencies the responsibility for development of a national atomic-energy program. We believe such a division would seriously hinder and delay this development and result in waste and duplication of effort, particularly in view of the present state of the art.
>
> * * * * *
>
> Although we believe that establishing a separate agency would be undesirable, consideration is being given to the possibility of rearranging the Commission's organizational structure in view of the increasing activities in the regulatory area. You will be kept advised of developments in this regard.[26]

At this stage of the atomic-development program, the arguments against a separate agency are perhaps more persuasive than they will be at a later stage when commercial production of atomic power is achieved and the Government's developmental and promotional assignments are a less prominent part of the Government's overall role atomic-power development. In the program thus far, while industry has been necessarily dependent on Government information, services, and assistance, the new partnership of Government and industry has proven successful in many important respects. The AEC staff has succeeded commendably in its efforts to cut redtape and administrative delay in handling license applications. It has made good use of the comparatively small number of experienced experts in a novel and complex area.

As a longer range view is taken of atomic energy development, however, the strength of the arguments against a separate agency diminish, and tend at some point to be outweighed by the arguments favoring separation. When the day of commercial atomic power arrives, and the atomic industry can operate free from Government assistance, one can see definite advantages in an agency established to regulate that industry which would be independent of the Government's manufacturing, producing, and operational efforts in the atomic energy program.

At the other end of the scale of possibilities, involving merely division reorganization and the concentration of regulatory authority in the Division of Civilian Application, as discussed above, there would be least interference with the present coordinated developmental effort, and least duplication of functions and redtape and delay.

[26] The full text of the AEC letter is set out in appendix 5.

However, such a change would also least contribute to greater objectivity in the administration of the licensing program, and in assuring hazard evaluation and application decisions in a quasi-judicial atmosphere totally removed from conflicting considerations.

The same arguments applicable to the two extremes apply to the middle possibility of internal reorganization and reallocation of responsibility, but with less force in each case. The creation of an independent or semi-independent regulatory agency within the AEC would not cause as much interference with a coordinated atomic program as would the separate-agency approach; but neither would it go as far toward obtaining objectivity and impartiality. The variations of this intermediate possibility perhaps suggest arrangements capable of transitional application which would not destroy the advantages and achievements of the present organization, and yet would constitute a first step toward the eventual desideratum of a separated regulatory agency.

TYPE OF SEPARATION AND TIMING

The selection of a particular organizational arrangement is closely related, of course, to the time of the selection and the licensing workload of the Commission at that stage of development. Certain organizational possibilities have been discussed here which are admittedly long range, but which might provide the basis for subsequent evaluation or which might serve to indicate the direction in which a sensible practical first step might be taken now, before the AEC organization is expanded further on its present foundations. The purpose of this study has been to provide a basis for analysis of the problem by the Joint Committee and the Congress both as to the immediate and the more serious future implications.

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Appendix 1

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"CHAPTER 1. DECLARATION, FINDINGS, AND PURPOSE

"SECTION 1. DECLARATION.—Atomic energy is capable of application for peaceful as well as military purposes. It is therefore declared to be the policy of the United States that—

"a. the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and

"b. the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise.

"SEC. 2. FINDINGS.—The Congress of the United States hereby makes the following findings concerning the development, use, and control of atomic energy:

"a. The development, utilization, and control of atomic energy for military and for all other purposes are vital to the common defense and security.

"b. In permitting the property of the United States to be used by others, such use must be regulated in the national interest and in order to provide for the common defense and security and to protect the health and safety of the public.

"c. The processing and utilization of source, byproduct, and special nuclear material affect interstate and foreign commerce and must be regulated in the national interest.

"d. The processing and utilization of source, byproduct, and special nuclear material must be regulated in the national interest and in order to provide for the common defense and security and to protect the health and safety of the public.

"e. Source and special nuclear material, production facilities, and utilization facilities are affected, with the public interest, and regulation by the United States of the production and utilization of atomic energy and of the facilities used in connection therewith is necessary in the national interest to assure the common defense and security and to protect the health and safety of the public.

"f. The necessity for protection against possible interstate damage occurring from the operation of facilities for the production or utilization of source or special nuclear material places the operation of those facilities in interstate commerce for the purposes of this Act.

"g. Funds of the United States may be provided for the development and use of atomic energy under conditions which will provide for the common defense and security and promote the general welfare.

"h. It is essential to the common defense and security that title to all special nuclear material be in the United States while such special nuclear material is within the United States.

"SEC. 3. PURPOSE.—It is the purpose of this Act to effectuate the policies set forth above by providing for—

"a. a program of conducting, assisting, and fostering research and development in order to encourage maximum scientific and inductrial progress;

"b. a program for the dissemination of unclassified scientific and technical information and for the control, dissemination, and

declassification of Restricted Data, subject to appropriate safeguards, so as to encourage scientific and industrial progress;

"c. a program for Government control of the possession, use, and production of atomic energy and special nuclear material so directed as to make the maximum contribution to the common defense and security and the national welfare;

"d. a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public;

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"f. a program of administration which will be consistent with the foregoing policies and programs, with international arrangements, and with agreements for cooperation, which will enable the Congress to be currently informed so as to take further legislative action as may be appropriate.

"CHAPTER 2. DEFINITIONS

"SEC. 11. DEFINITIONS.—The intent of Congress in the definitions as given in this section should be construed from the words or phrases used in the definitions. As used in this Act:

"a. The term 'agency of the United States' means the executive branch of the United States, or any Government agency, or the legislative branch of the United States, or any agency, committee, commission, office, or other establishment in the legislative branch, or the judicial branch of the United States, or any office, agency, committee, commission, or other establishment in the judicial branch.

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"f. The term 'Commission' means the Atomic Energy Commission.

"g. The term 'common defense and security' means the common defense and security of the United States.

* * * * * * *

"j. The term 'Government agency' means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government.

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"l. The term 'Joint Committee' means the Joint Committee on Atomic Energy.

"m. The term 'operator' means any individual who manipulates the controls of a utilization or production facility.

"n. The term 'person' means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission, any State or any political subdivision of, or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

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"p. The term 'production facility' means (1) any equipment or device determined by rule of the Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission.

"q. The term 'research and development' means (1) theoretical analysis, exploration, or experimentation; or (2) the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials, and processes.

"r. The term 'Restricted Data' means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142.

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"v. The term 'utilization facility' means (1) any equipment or device, except an atomic weapon, determined by rule of the Commission to be capable of making use of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public, or peculiarly adapted for making use of atomic energy in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission.

"CHAPTER 3. ORGANIZATION

"SEC. 21. ATOMIC ENERGY COMMISSION.—There is hereby established an Atomic Energy Commission, which shall be composed of five members, each of whom shall be a citizen of the United States. The President shall designate one member of the Commission as Chairman thereof to serve as such during the pleasure of the President.

* * * * * * *

"SEC. 22. MEMBERS.—

"a. Members of the Commission shall be appointed by the President, by and with the advice and consent of the Senate. In submitting any nomination to the Senate, the President shall set forth the experience and qualifications of the nominee. * * * Any member of the Commission may be removed by the President for inefficiency, neglect of duty, or malfeasance in office. Each member, except the Chairman, shall receive compensation at the rate of $18,000 per annum; and the member designated as Chairman shall receive compensation at the rate of $20,000 per annum.

"b. No member of the Commission shall engage in any business, vocation, or employment other than that of serving as a member of the Commission.

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"SEC. 24. GENERAL MANAGER.—There is hereby established within the Commission a General Manager, who shall discharge such of the administrative and executive functions of the Commission as the Commission may direct. The General Manager shall be appointed by the Commission, shall serve at the pleasure of the Commission, shall be removable by the Commission, and shall receive compensation at a rate determined by the Commission, but not in excess of $20,000 per annum.

"SEC. 25. DIVISIONS AND OFFICES.—There is hereby established within the Commission—

"a. a Division of Military Application and such other program divisions (not to exceed ten in number) as the Commission may determine to be necessary to the discharge of its responsibilities, including a division or divisions the primary responsibilities of which include the development and application of civilian uses of atomic energy. Each such division shall be under the direction of a Director who shall be appointed by the Commission and shall receive compensation at a rate determined by the Commission, but not in excess of $16,000 per annum. The Director of the Division of Military Application shall be an active member of the Armed Forces. The Commission shall require each such division to exercise such of the Commission's administrative and executive powers as the Commission may determine;

"b. an Office of the General Counsel under the direction of the General Counsel who shall be appointed by the Commission and shall receive compensation at a rate determined by the Commission, but not in excess of $16,000 per annum; and

"c. an Inspection Division under the direction of a Director who shall be appointed by the Commission and shall receive compensation at a rate determined by the Commission, but not in excess of $16,000 per annum. The Inspection Division shall be responsible for gathering information to show whether or not the contractors, licensees, and officers and employees of the Commission are complying with the provisions of this Act (except those provisions for which the Federal Bureau of Investigation is responsible) and the appropriate rules and regulations of the Commission.

* * * * * * *

"CHAPTER 4. RESEARCH

"SEC. 31. RESEARCH ASSISTANCE.—

"a. The Commission is directed to exercise its powers in such manner as to insure the continued conduct of research and development and training activities in the fields specified below, by private or public institutions or persons, and to assist in the acquisition of an ever-expanding fund of theoretical and practical knowledge in such fields. To this end the Commission is authorized and directed to make arrangements (including contracts, agreements, and loans) for the conduct of research and development activities relating to—

* * * * * * *

"(3) utilization of special nuclear material and radioactive material for medical, biological, agricultural, health, or military purposes;

"(4) utilization of special nuclear material, atomic energy, and radioactive material and processes entailed in the utilization or production of atomic energy or such material for all other purposes, including industrial uses, the generation of usable energy, and the demonstration of the practical value of utilization or production facilities for industrial or commercial purposes; and

"(5) the protection of health and the promotion of safety during research and production activities.

"b. The Commission is further authorized to make grants and contributions to the cost of construction and operation of reactors and other facilities and other equipment to colleges, universities, hospitals, and eleemosynary or charitable institutions for the conduct of educational and training activities relating to the fields in subsection a.

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"d. The arrangements made pursuant to this section shall contain such provisions (1) to protect health, (2) to minimize danger to life or property, and (3) to require the reporting and to permit the inspection of work performed thereunder, as the Commission may determine. No such arrangement shall contain any provisions or conditions which prevent the dissemination of scientific or technical information, except to the extent such dissemination is prohibited by law.

"SEC. 32. RESEARCH BY THE COMMISSION.—The Commission is authorized and directed to conduct, through its own facilities, activities and studies of the types specified in section 31.

"SEC. 33. RESEARCH FOR OTHERS.—Where the Commission finds private facilities or laboratories are inadequate to the purpose, it is authorized to conduct for other persons, through its own facilities, such of those activities and studies of the types specified in section 31 as it deems appropriate to the development of atomic energy. The Commission is authorized to determine and make such charges as in its discretion may be desirable for the conduct of such activities and studies.

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"CHAPTER 10. ATOMIC ENERGY LICENSES

"SEC. 101. LICENSE REQUIRED.—It shall be unlawful, except as provided in section 91, for any person within the United States to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export any utilization or production facility except under and in accordance with a license issued by the Commission pursuant to section 103 or 104.

"SEC. 102. FINDING OF PRACTICAL VALUE.—Whenever the Commission has made a finding in writing that any type of utilization or production facility has been sufficiently developed to be of practical value for industrial or commercial purposes, the Commission may thereafter issue licenses for such type of facility pursuant to section 103.

"SEC. 103. COMMERCIAL LICENSES.—

"a. Subsequent to a finding by the Commission as required in section 102, the Commission may issue licenses to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation arranged pursuant to section 123, such type of utilization

or production facility. Such licenses shall be issued in accordance with the provisions of chapter 16 and subject to such conditions as the Commission may by rule or regulation establish to effectuate the purposes and provisions of this Act.

"b. The Commission shall issue such licenses on a nonexclusive basis to persons applying therefor (1) whose proposed activities will serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized; (2) who are equipped to observe and who agree to observe such safety standards to protect health and to minimize danger to life or property as the Commission may by rule establish; and (3) who agree to make available to the Commission such technical information and data concerning activities under such licenses as the Commission may determine necessary to promote the common defense and security and to protect the health and safety of the public. All such information may be used by the Commission only for the purposes of the common defense and security and to protect the health and safety of the public.

"c. Each such license shall be issued for a specified period, as determined by the Commission, depending on the type of activity to be licensed, but not exceeding forty years, and may be renewed upon the expiration of such period.

"d. No license under this section may be given to any person for activities which are not under or within the jurisdiction of the United States, except for the export of production or utilization facilities under terms of an agreement for cooperation arranged pursuant to section 123, or except under the provisions of section 109. No license may be issued to an alien or any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. In any event, no license may be issued to any person within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public.

"SEC. 104. MEDICAL THERAPY AND RESEARCH AND DEVELOPMENT.—

"a. The Commission is authorized to issue licenses to persons applying therefor for utilization facilities for use in medical therapy. In issuing such licenses the Commission is directed to permit the widest amount of effective medical therapy possible with the amount of special nuclear material available for such purposes and to impose the minimum amount of regulation consistent with its obligations under this Act to promote the common defense and security and to protect the health and safety of the public.

"b. The Commission is authorized to issue licenses to persons applying therefor for utilization and production facilities involved in the conduct of research and development activities leading to the demonstration of the practical value of such facilities for industrial or commercial purposes. In issuing licenses under this subsection, the Commission shall impose the minimum amount of such regulations and terms of license as will permit the Commission to fulfill its obligations under this Act to promote the common defense and secutity and to protect the health and safety of the public and will be compatible with the regulations and terms of license which would apply

in the event that a commercial license were later to be issued pursuant to section 103 for that type of facility. In issuing such licenses, priority shall be given to those activities which will, in the opinion of the Commission, lead to major advances in the application of atomic energy for industrial or commercial purposes.

"c. The Commission is authorized to issue licenses to persons applying therefor for utilization and production facilities useful in the conduct of research and development activities of the types specified in section 31 and which are not facilities of the type specified in subsection 104b. The Commission is directed to impose only such minimum amount of regulation of the licensee as the Commission finds will permit the Commission to fulfill its obligations under this Act to promote the common defense and security and to protect the health and safety of the public and will permit the conduct of widespread and diverse research and development.

"d. No license under this section may be given to any person for activities which are not under or within the jurisdiction of the United States, except for the export of production or utilization facilities under terms of an agreement for cooperation arranged pursuant to section 123 or except under the provisions of section 109. No license may be issued to any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. In any event, no license may be issued to any person within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public.

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"SEC. 106. CLASSES OF FACILITIES.—The Commission may—

"a. group the facilities licensed either under section 103 or under section 104 into classes which may include either production or utilization facilities or both, upon the basis of the similarity of operating and technical characteristics of the facilities;

"b. define the various activities to be carried on at each such class of facility; and

"c. designate the amounts of special nuclear material available for use by each such facility.

* * * * * * *

"SEC. 109. COMPONENT PARTS OF FACILITIES.—With respect to to those utilization and production facilities which are so determined by the Commission pursuant to subsection 11 p. (2) or 11 v. (2) the Commission may (a) issue general licenses for activities required to be licensed under section 101, if the Commission determines in writing that such general licensing will not constitute an unreasonable risk to the common defense and security, and (b) issue licenses for the export of such facilities, if the Commission determines in writing that each export will not constitute an unreasonable risk to the common defense and security.

"SEC. 110. EXCLUSIONS.—Nothing in this chapter shall be deemed—

"a. to require a license for (1) the processing, fabricating, or refining of special nuclear material, or the separation of special nuclear material, or the separation of special nuclear material from other substances, under contract with and for the account

of the Commission; or (2) the construction or operation of facilities under contract with and for the account of the Commission; or

"b. to require a license for the manufacture, production, or acquisition by the Department of Defense of any utilization facility authorized pursuant to section 91, or for the use of such facility by the Department of Defense or a contractor thereof.

* * * * * * *

"CHAPTER 14. GENERAL AUTHORITY

"SEC. 161. GENERAL PROVISIONS.—In the performance of its functions the Commission is authorized to—

"a. establish advisory boards to advise with and make recommendations to the Commission on legislation, policies, administration, research, and other matters, provided that the Commission issues regulations setting forth the scope, procedure, and limitations of the authority of each such board;

"b. establish by rule, regulation, or order, such standards and instructions to govern the possession and use of special nuclear material, source material, and byproduct material as the Commission may deem necessary or desirable to promote the common defense and security or to protect health or to minimize danger to life or property;

* * * * * * *

"d. appoint and fix the compensation of such officers and employees as may be necessary to carry out the functions of the Commission. Such officers and employees shall be appointed in accordance with the civil-service laws and their compensation fixed in accordance with the Classification Act of 1949, as amended, except that, to the extent the Commission deems such action necessary to the discharge of its responsibilities, personnel may be employed and their compensation fixed without regard to such laws: *Provided, however,* That no officer or employee (except such officers and employees whose compensation is fixed by law, and scientific and technical personnel) whose position would be subject to the Classification Act of 1949, as amended, if such Act were applicable to such position, shall be paid a salary at a rate in excess of the rate payable under such Act for positions of equivalent difficulty or responsibility. The Commission shall make adequate provision for administrative review of any determination to dismiss any employee;

* * * * * * *

"h. consider in a single application one or more of the activities for which a license is required by this Act, combine in a single license one or more of such activities, and permit the applicant or licensee to incorporate by reference pertinent information already filed with the Commission;

"i. prescribe such regulations or orders as it may deem necessary (1) to protect Restricted Data received by any person in connection with any activity authorized pursuant to this Act, (2) to guard against the loss or diversion of any special nuclear material acquired by any person pursuant to section 53 or produced by any person in connection with any activity authorized pursuant to this Act, and to prevent any use or disposition

thereof which the Commission may determine to be inimical to the common defense and security, and (3) to govern any activity authorized pursuant to this Act, including standards and restrictions governing the design, location, and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property;

* * * * * * *

"m. enter into agreements with persons licensed under section 103 or 104 for such periods of time as the Commission may deem necessary or desirable (1) to provide for the processing, fabricating, separating, or refining in facilities owned by the Commission of source, byproduct, or other material or special nuclear material owned by or made available to such licensees and which is utilized or produced in the conduct of the licensed activity, and (2) to sell, lease, or otherwise make available to such licensees such quantities of source or byproduct material, and other material not defined as special nuclear material pursuant to this Act, as may be necessary for the conduct of the licensed activity: *Provided, however*, That any such agreement may be canceled by the licensee at any time upon payment of such reasonable cancellation charges as may be agreed upon by the licensee and the Commission: *And provided further*, That the Commission shall establish prices to be paid by licensees for material or services to be furnished by the Commission pursuant to this subsection, which prices shall be established on such a nondiscriminatory basis as, in the opinion of the Commission, will provide reasonable compensation to the Government for such material or services and will not discourage the development of sources of supply independent of the Commission;

* * * * * * *

"o. delegate to the General Manager or other officers of the Commission any of those functions assigned to it under this Act except those specified in sections 51, 57 a. (3), 61, 102 (with respect to the finding of practical value), 108, 123, 145 b. (with respect to the determination of those persons to whom the Commission may reveal Restricted Data in the national interest), 145 e., and 161 a.;

"p. require by rule, regulation, or order, such reports, and the keeping of such records with respect to, and to provide for such inspections of, activities and studies of types specified in section 31 and of activities under licenses issued pursuant to sections 53, 63, 81, 103, and 104, as may be necessary to effectuate the purposes of this Act, including section 105; and

"q. make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this Act.

* * * * * * *

"SEC. 169. NO SUBSIDY.—No funds of the Commission shall be employed in the construction or operation of facilities licensed under section 103 or 104 except under contract or other arrangement entered into pursuant to section 31.

* * * * * * *

"CHAPTER 16. JUDICIAL REVIEW AND ADMINISTRATIVE PROCEDURE

"SEC. 181. GENERAL.—The provisions of the Administrative Procedure Act (Public Law 404, Seventy-ninth Congress, approved June 11, 1946) shall apply to all agency action taken under this Act, and the terms 'agency' and 'agency action' shall have the meaning specified in the Administrative Procedure Act: *Provided, however*, That in the case of agency proceedings or actions which involve Restricted Data or defense information, the Commission shall provide by regulation for such parallel procedures as will effectively safeguard and prevent disclosure of Restricted Data or defense information to unauthorized persons with minimum impairment of the procedural rights which would be available if Restricted Data or defense information were not involved.

"SEC. 182. LICENSE APPLICATIONS.—

"a. Each application for a license hereunder shall be in writing and shall specifically state such information as the Commission, by rule or regulation, may determine to be necessary to decide such of the technical and financial qualifications of the applicant, the character of the applicant, the citizenship of the applicant, or any other qualifications of the applicant as the Commission may deem appropriate for the license. In connection with applications for licenses to operate production or utilization facilities, the applicant shall state such technical specifications, including information of the amount, kind, and source of special nuclear material required, the place of the use, the specific characteristics of the facility, and such other information as the Commission may, by rule or regulation, deem necessary in order to enable it to find that the utilization or production of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public. Such technical specifications shall be a part of any license issued. The Commission may at any time after the filing of the original application, and before the expiration of the license, require further written statements in order to enable the Commission to determine whether the application should be granted or denied or whether a license should be modified or revoked. All applications and statements shall be signed by the applicant or licensee. Applications for, and statements made in connection with, licenses under sections 103 and 104 shall be made under oath or affirmation. The Commission may require any other applications or statements to be made under oath or affirmation.

"b. The Commission shall not issue any license for a utilization or production facility for the generation of commercial power under section 103, until it has given notice in writing to such regulatory agency as may have jurisdiction over the rates and services of the proposed activity, to municipalities, private utilities, public bodies, and cooperatives within transmission distance authorized to engage in the distribution of electric energy and until it has published notice of such application once each week for four consecutive weeks in the Federal Register, and until four weeks after the last notice.

"c. The Commission, in issuing any license for a utilization or production facility for the generation of commercial power under section 103, shall give preferred consideration to applications for such facilities which will be located in high cost power areas in the

United States if there are conflicting applications for a limited opportunity for such license. Where such conflicting applications resulting from limited opportunity for such license include those submitted by public or cooperative bodies such applications shall be given preferred consideration.

"SEC. 183. TERMS OF LICENSES.—Each license shall be in such form and contain such terms and conditions as the Commission may, by rule or regulation, prescribe to effectuate the provisions of this Act, including the following provisions:

"a. Title to all special nuclear material utilized or produced by facilities pursuant to the license, shall at all times be in the United States.

"b. No right to the special nuclear material shall be conferred by the license except as defined by the license.

"c. Neither the license nor any right under the license shall be assigned or otherwise transferred in violation of the provisions of this Act.

"d. Every license issued under this Act shall be subject to the right of recapture or control reserved by section 108, and to all of the other provisions of this Act, now or hereafter in effect and to all valid rules and regulations of the Commission.

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"SEC. 185. CONSTRUCTION PERMITS.—All applicants for licenses to construct or modify production or utilization facilities shall, if the application is otherwise acceptable to the Commission, be initially granted a construction permit. The construction permit shall state the earliest and latest dates for the completion of the construction or modification. Unless the construction or modification of the facility is completed by the completion date, the construction permit shall expire, and all rights thereunder be forfeited, unless upon good cause shown, the Commission extends the completion date. Upon the completion of the construction or modification of the facility, upon the filing of any additional information needed to bring the original application up to date, and upon finding that the facility authorized has been constructed and will operate in conformity with the application as amended and in conformity with the provisions of this Act and of the rules and regulations of the Commission, and in the absence of any good cause being shown to the Commission why the granting of a license would not be in accordance with the provisions of this Act, the Commission shall thereupon issue a license to the applicant. For all other purposes of this Act, a construction permit is deemed to be a 'license'.

"SEC. 186. REVOCATION.—

"a. Any license may be revoked for any material false statement in the application or any statement of fact required under section 182, or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for failure to construct or operate a facility in accordance with the terms of the construction permit or license or the technical specifications in the application, or for violation of, or failure to observe any of the terms and provisions of this Act or of any regulation of the Commission.

"b. The Commission shall follow the provisions of section 9 (b) of the Administrative Procedure Act in revoking any license.

"c. Upon revocation of the license, the Commission may immediately retake possession of all special nuclear material held by the licensee. In cases found by the Commission to be of extreme importance to the national defense and security or to the health and safety of the public, the Commission may recapture any special nuclear material held by the licensee or may enter upon and operate the facility prior to any of the procedures provided under the Administrative Procedure Act. Just compensation shall be paid for the use of the facility.

"SEC. 187. MODIFICATION OF LICENSE.—The terms and conditions of all licenses shall be subject to amendment, revision, or modification, by reason of amendments of this Act or by reason of rules and regulations issued in accordance with the terms of this Act.

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"SEC. 189. HEARINGS AND JUDICIAL REVIEW.—

"a. In any proceeding under this Act, for the granting, suspending, revoking, or amending of any license or construction permit, or application to transfer control, and in any proceeding for the issuance or modification of rules and regulations dealing with the activities of licensees, and in any proceeding for the payment of compensation, an award or royalties under sections 153, 157, 186 c., or 188, the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding.

"(b) Any final order entered in any proceeding of the kind specified in subsection a. above shall be subject to judicial review in the manner prescribed in the Act of December 29, 1950, as amended (ch. 1189, 64 Stat. 1129), and to the provisions of section 10 of the Administrative Procedure Act, as amended.

"CHAPTER 17. JOINT COMMITTEE ON ATOMIC ENERGY

"SEC. 201. MEMBERSHIP.—There is hereby established a Joint Committee on Atomic Energy to be composed of nine Members of the Senate to be appointed by the President of the Senate, and nine Members of the House of Representatives to be appointed by the Speaker of the House of Representatives. In each instance not more than five Members shall be members of the same political party.

"SEC. 202. AUTHORITY AND DUTY.—The Joint Committee shall make continuing studies of the activities of the Atomic Energy Commission and of problems relating to the development, use, and control of atomic energy. During the first sixty days of each session of the Congress, the Joint Committee shall conduct hearings in either open or executive session for the purpose of receiving information concerning the development, growth, and state of the atomic energy industry. The Commission shall keep the Joint Committee fully and currently informed with respect to all of the Commission's activities. The Department of Defense shall keep the Joint Committee fully and currently informed with respect to all matters within the Department of Defense relating to the development, utilization, or application of atomic energy. Any Government agency shall furnish any information requested by the Joint Committee with respect to the activities or responsibilities of that agency in the field of atomic energy. All

bills, resolutions, and other matters in the Senate or the House of Representatives relating primarily to the Commission or to the development, use, or control of atomic energy shall be referred to the Joint Committee. The members of the Joint Committee who are Members of the Senate shall from time to time report to the Senate, and the members of the Joint Committee who are Members of the House of Representatives shall from time to time report to the House, by bill or otherwise, their recommendations with respect to matters within the jurisdiction of their respective Houses which are referred to the Joint Committee or otherwise within the jurisdiction of the Joint Committee.

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CHAPTER 18. ENFORCEMENT

* * * * * * *

"SEC. 222. VIOLATION OF SPECIFIC SECTIONS.—Whoever willfully violates, attempts to violate, or conspires to violate, any provision of sections 57, 92, or 101, or whoever unlawfully interferes, attempts to interfere, or conspires to interfere with any recapture or entry under section 108, shall, upon conviction thereof, be punished by a fine of not more than $10,000 or by imprisonment for not more than five years, or both, except that whoever commits such an offense with intent to injure the United States or with intent to secure an advantage to any foreign nation shall, upon conviction thereof, be punished by death or imprisonment for life (but the penalty of death or imprisonment for life may be imposed only upon recommendation of the jury), or by a fine of not more than $20,000 or by imprisonment for not more than twenty years, or both.

"SEC. 223. VIOLATION OF SECTIONS GENERALLY.—Whoever willfully violates, attempts to violate, or conspires to violate, any provision of this Act for which no penalty is specifically provided or of any regulation or order prescribed or issued under section 65 or subsections 161 b., i., or p. shall, upon conviction thereof, be punished by a fine of not more than $5,000 or by imprisonment for not more than two years, or both, except that whoever commits such an offense with intent to injure the United States or with intent to secure an advantage to any foreign nation, shall, upon conviction thereof, be punished by a fine of not more than $20,000 or by imprisonment for not more than twenty years, or both.

* * * * * * *

"SEC. 232. INJUNCTION PROCEEDINGS.—Whenever in the judgment of the Commission any person has engaged or is about to engage in any acts or practices which constitute or will constitute a violation of any provision of this Act, or any regulation or order issued thereunder, the Attorney General on behalf of the United States may make application to the appropriate court for an order enjoining such acts or practices, or for an order enforcing compliance with such provision, and upon a showing by the Commission that such person has engaged or is about to engage in any such acts or practices, a permanent or temporary injunction, restraining order, or other order may be granted.

* * * * * * *

CHAPTER 19. MISCELLANEOUS

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"SEC. 271. AGENCY JURISDICTION.—Nothing in this Act shall be construed to affect the authority or regulations of any Federal, State, or local agency with respect to the generation, sale, or transmission of electric power.

"SEC. 272. APPLICABILITY OF FEDERAL POWER ACT.—Every licensee under this Act who holds a license from the Commission for a utilization or production facility for the generation of commercial electric energy under section 103 and who transmits such electric energy in interstate commerce or sells it at wholesale in interstate commerce shall be subject to the regulatory provisions of the Federal Power Act.

"SEC. 273, LICENSING OF GOVERNMENT AGENCIES.—Nothing in this Act shall preclude any Government agency now or hereafter authorized by law to engage in the production, marketing, or distribution of electric energy from obtaining a license under section 103, if qualified under the provisions of section 103, for the construction and operation of production or utilization facilities for the primary purpose of producing electric energy for disposition for ultimate public consumption.

APPENDIX 2

EXTRACTS FROM LEGISLATIVE HISTORY OF CERTAIN SECTIONS OF THE ATOMIC ENERGY ACT OF 1954

As indicated in the Introduction, there were a number of developments between August of 1954 and August of 1956 which, in the opinion of Chairman Anderson, made a reappraisal of AEC facility licensing procedures appropriate at this time. For purposes of background, there have been collected in this appendix certain extracts from and references to the 1954 legislative process, including hearings before the Joint Committee, Joint Committee bills, Joint Committee reports, proposed amendments, and floor debate.[1] Since this study primarily concerns facility rather than materials licenses, this appendix makes reference only to portions of the legislative history dealing primarily with facility or reactor licensing.

Section 181. The Administrative Procedure Act and "parallel procedures"

Section 181 states that the provisions of the Administrative Procedure Act shall be applicable, with the proviso that in proceedings involving classified information, the Commission shall provide by regulation for "parallel procedures" to safeguard the information with "minimum impairment of the procedural rights."

The Administrative Procedure Act had been made generally applicable by section 14 of the original Atomic Energy Act of 1946, and there appears to have been little legislative public discussion of this continued requirement.

[1] All footnote references in this appendix unless otherwise identified will be to the three-volume work entitled "Legislative History of the Atomic Energy Act of 1954" (GPO, 1955), hereafter referred to as "Legislative History."

However, the "parallel procedures" concept was developed during the 1954 legislative process.

As originally introduced (H. R. 8862 by Mr. Cole in the House on April 15, 1954, and S. 3323 by Senator Hickenlooper in the Senate on April 19, 1954), section 181 read as follows:

> SEC. 181. GENERAL.—The provisions of the Administrative Procedure Act shall apply to all "agency acts," as that term is defined in the Administrative Procedure Act, specified in this Act. In determining whether or not an act of the Commission would be an "agency act" the fact that the national security and the common defense require the fact, or facts essential to that act to be kept secret shall not be considered. For those agency acts which can be made public, the full regular administrative procedures shall be followed. For those agency acts which cannot be undertaken in public, the Commission shall provide by regulation for identical procedures except that they shall not be made public.[2]

On April 15, 1954, at the time he introduced H. R. 8862, Mr. Cole made a statement on the floor of the House in which he said:

> In addition, normal administrative procedures have been established as far as possible consonant with the requirements of secrecy in the field because of common defense and security.[3]

The Joint Committee held hearings in May and June 1954 on the bills which had been introduced in April, and on June 30, 1954, Mr. Cole and Senator Hickenlooper introduced identical new bills, H.R. 9757 ant S. 3690, respectively. The Joint Committee report accompanying the new bills stated:

> Section 181 makes the provisions of the Administrative Procedure Act applicable to all agency actions of the Commission. Where publication of data involved in agency action is contrary to the national security and common defense, then identical secret procedures are required to be set up within the Commission. The Commission is required to grant a hearing to any party materially interested in any agency action.[4]

On July 16, 1954, Senator Hickenlooper offered in the Senate an amendment to substitute an entire new section 181 to his bill. This amendment was a committee amendment, and was agreed to without debate, and is the language now contained in section 181 of the act. At the time of introducing his amendment, Senator Hickenlooper said:

> Mr. President, the change in section 181 relating to the Administrative Procedure Act is to provide the Commission with a little more flexibility in dealing with procedures than was provided in this section in the bill. This proposal requires the Commission, where restricted data and defense information are concerned, to establish parallel procedures

[2] Legislative History, pp. 161 and 237.
[3] Legislative History, p. 2797.
[4] Legislative History, p. 776. As to the last sentence concerning hearings, see note 5 below and discussion in text infra concerning sec. 189.

to those regularly employed. But the procedures are such as to protect against the wrongful dissemination of restricted data and defense information while at the same time preserving as many of the normal procedures as is possible. The section in the bill required the Commission to have identical but secret proceedings.[5]

On July 24, 1954, Mr. Cole offered the same committee amendment substituting a new section 181 on the floor of the House which was agreed to without debate.[6]

Section 182a and b. License applications and notice

Section 182a concerns license applications and sets forth the matters which shall be included in the application. Section 182b provides that notice to certain parties and publication in the Federal Register shall be required before the Commission may issue a facility license under section 103.

There was little public discussion concerning section 182a. The language appearing in the first bills introduced in April (H. R. 8862 and S. 3323) remained substantially unchanged during the legislative process.

The bills introduced on June 30, 1954 (H. R. 9757 and S. 3690), contained, for the first time, subsection 182b concerning notice and publication on section 103 license applications. As contained in these bills, subsection b only required notice to "such regulatory agency as may have jurisdiction over the rates and services of the proposed activity." [7]

In the report of the Joint Committee on H. R. 9757, Mr. Holifield and Mr. Price stated separate views. As to section 182b they said:

> Section 182b, providing for due notice to the public before the issuance of any license for utilization or production facilities which generate commercial power, is lacking as to both breadth of notice required and provision of specific procedures in connection with license applications to assure full protection of the rights of interested parties. It also lacks specific recognition of those interests whose rights may be affected by Commission action or whose participation may be in the public interest.
>
> To cure these deficiencies, where generation of nuclear-electric power is the primary purpose involved, we believe the section should be amended to provide that notice of applications shall also be sent to municipalities, and to public and cooperative electric systems within transmission distance; that, in case of protests, conflicting applications, or proposals for special conditions, interested parties shall be accorded opportunity for intervention, hearing, petition for rehearing, and appeal, in general accord with the procedures now prevailing under Federal power legislation; and that the Commission may admit as parties interested States, State commissions, municipalities, public and cooperative electric systems, or representatives of interested consumers or

[5] Legislative History, p. 3175. On July 16, 1954, Senator Hickenlooper also introduced an amendment, which was agreed to, substituting a new sec. 189, containing a provision concerning hearings similar to that formerly contained in the last sentence of sec. 181 of S. 3690. See Legislative History, pp. 3174–3175, and discussion in text under sec. 189, infra.

[6] Legislative History, p. 2955.

[7] Legislative History, pp. 625 and 729.

> security holders, or any competitor of a party to such proceedings, or any other person whose participation may be in the public interest.[8]

After discussion by Mr. Holifield in the House,[9] and Senators Humphrey [10] and Gore [11] in the Senate, this was broadened to require notice also on section 103 applications to "municipalities, private utilities, public bodies, and cooperatives within transmission distance authorized to engage in the distribution of electric energy." [12]

As to this addition of a broader notice requirement, the report of both conference committees contains the following statement:

> NOTICE OF LICENSES
>
> The House bill contained a provision requiring the Commission to give notice of proposed licenses under section 103 to those within transmission distance who might be engaged in the distribution of electricity. The Senate amendment required that notice be given to private utilities as well as to those persons included within the House provision. The conference substitute retains the Senate language with a minor amendment.[13]

In addition, identical amendments to section 182 were offered by Mr. Holifield in the House and by Senators Humphrey and Magnuson in the Senate, to provide in certain situations for hearings similar to those held by the Federal Power Commission on applications for licenses. However, since the language concerning opportunity for hearing eventually was placed in section 189 of the act, those amendments will be discussed infra in the discussion concerning section 189.

Section 185. Construction permits

Section 185 of the act concerning construction permits was unchanged during the legislative process and contains the language set forth in the original bills introduced in April in each House (H. R. 8862 and S. 3323).

During the hearings before the Joint Committee, several witnesses referred to the fact that a license under section 103 or section 104 would not necessarily follow after construction even though a construction permit had been issued under section 185.[14]

In their statement of separate views on H. R. 9757, Mr. Holifield and Mr. Price stated:

> Section 185, providing for the issuance of construction permits to applicants whose applications are otherwise satisfactory to the Commission, should be specifically subject to the same procedural safeguards, assuring interested parties full opportunity for notice, hearings, and appeal before issuance, as are provided in connection with the issuance of licenses under section 182. We believe that the section should be amended to make the same procedure specified in

[8] Legislative History, p. 1118.
[9] Legislative History, pp. 2848-2850.
[10] Legislative History, p. 3373.
[11] Legislative History, p. 3454.
[12] Present language in sec. 189b of the Act.
[13] Legislative History, pp. 1510 and 1562.
[14] Legislative History, pp. 1757, 1861, and 2051.

section 182 mandatory before construction permits are issued.[15]

Identical amendments were introduced by Mr. Holifield [16] in the House and by Senator Humphrey [17] and Senator Magnuson [18] in the Senate to add the following language to section 185:

> And no construction permit shall be issued by the Commission until after the completion of the procedures established by section 182 for the consideration of applications for licenses under this Act.

During the debate on section 185 in the Senate, on July 23, 1954, Senator Jackson spoke in favor of Senator Humphrey's proposed amendment as follows:

> As the bill now stands, the Atomic Energy Commission could issue a permit for the construction of a nuclear power facility before a license is finally granted by the Commission. If this procedure were followed, a licensee could proceed with construction of a facility and invest large sums before the Commission had an opportunity to complete the processing of the license application.
>
> Under such a procedure, the Commission could completely circumvent the carefully devised provisions of the bill relating to the issuance of licenses, for it is doubtful whether the Commission would fail to issue a license to a corporation which had already made substantial investments, pursuant to the authority granted it by the construction permit.
>
> The amendment by the Senator from Minnesota which I have quoted above is therefore essential if we are to prevent the circumvention of the license procedures contained in the act.[19]

Senator Humphrey on July 26, 1954, withdrew his amendment after Senator Hickenlooper referred to the committee amendment specifying that applications for construction permits would be treated in the same manner as applications for licenses.[20] The proposed amendment was not discussed nor adopted in the House.

Section 189. Hearings and judicial review

Section 189a provides that the Commission shall grant a hearing upon request in certain proceedings, and section 189b provides that final orders in such proceedings shall be subject to judicial review.

As originally introduced, the April 1954 bills concerned only judicial review and had no provision concerning opportunity for a hearing. H. R. 8862 and S. 3323 originally provided:

> SEC. 189. JUDICIAL REVIEW.—Any proceeding to enjoin, set aside, annul or suspend any order of the Commission shall be brought as provided by and in the manner prescribed in the Act of December 29, 1950 (c. 1189, 64 Stat. 1129), as amended. In the event that the final order of the Commission entered in accordance with the provisions of section 188 is different from the order entered by the

[15] Legislative History, p. 1119.
[16] Legislative History, p. 2848.
[17] Legislative History, p. 1168.
[18] Legislative History, p. 1209.
[19] Legislative History, p. 3258.
[20] Legislative History, p. 3759.

> Commission before the petition to review was filed with the Review Board, the Commission may also appeal from the final order in accordance with the provisions of this section.

As indicated infra, the April bills contained a section 188 establishing a Review Board, but that section was omitted in the subsequent bills.

The language in section 189 concerning hearings was added during the floor debate. As indicated in the discussion above concerning sections 181 [21] and 182b,[22] similar language concerning opportunity for hearing on license applications appeared in section 181 of the June 30, 1954, bills, and in amendments introduced in both Houses to section 182b. These latter identical amendments were offered by Mr. Holifield in the House [23] and Senators Humphrey [24] and Magnuson [25] in the Senate and read as follows:

> In case of protests or conflicting applications or requests for the establishment of special conditions in prospective licenses, the Commission shall, prior to issuance of any license, hold public hearings on such application or applications in general accordance with the procedures established in connection with consideration of applications for licenses under the Federal Power Act and interested parties shall have the same rights of intervention in such proceedings, application for rehearing, and appeal from decisions of the Commission as are provided in that act and in the Administrative Procedure Act. In any proceeding before it, the Commission, in accordance with such rules and regulations as it may prescribe, may admit as a party any interested State, State commission, municipality, public or cooperative electric system, or any competitor of a party to such proceeding, or any other person whose participation may be in the public interest.

These amendments did not pass, but they brought comments from Senator Anderson on the floor of the Senate on July 14, 1954, as follows:

> * * * it appears to me we ought to have the fullest possible publicity in connection with the granting of the licenses.
>
> While I am not trying to quarrel with the provision of the section, I believe it would be wise, so far as it could be done, to make provision so that the greatest possible amount of public good may result from the granting of the licenses. If enough provisions to safeguard that objective have been written into the bill, I am satisfied. If not, I think we ought to try our best to write sufficient provisions into the bill.[26]

Concerning the incorporation of the provisions of the Administrative Procedure Act, Senator Anderson said:

> I read that, and I thought it meant that the provisions of the Administrative Procedure Act in relation to hearings automatically become effective in connection with the granting of licenses by the Commission. But, unfortunately, the

[21] See note 4.
[22] See note 5.
[23] Legislative History, p. 2848.
[24] Legislative History, p. 1165.
[25] Legislative History, p. 1208.
[26] Legislative History, p. 3072.

Administrative Procedure Act, when we read it—and again I say I read it as a layman, not as a lawyer—does not require a hearing unless the basic legislation requires a hearing. If the basic legislation does require a hearing, a hearing is required by the Administrative Procedure Act. But in this case the basic legislation does not require a hearing, so the reference to the Administrative Procedure Act seems to me to be an idle one.

I merely am trying to say that I believe these things should be carefully considered.[27]

Shortly later in the floor debate, Senator Anderson continued:

As I have said, it may be that I have misread the bill; it may be that the bill requires a hearing. But because I feel so strongly that nuclear energy is probably the most important thing we are dealing with in our industrial life today, I wish to be sure that the Commission has to do its business out of doors, so to speak, where everyone can see it.

Although I have no doubt about the ability or integrity of the members of the Commission, I simply wish to be sure they have to move where everyone can see every step they take; and if they are to grant a license in this very important field, where monopoly could so easily be possible, I think a hearing should be required and a formal record should be made regarding all aspects, including the public aspects.[28]

Senator Anderson concluded his remarks on the floor of the Senate as to hearings as follows:

Let me say I think it is important to tell who may be interested and therefore the widest publicity is necessary. For example, if the Commission were going to grant a franchise to enable someone to establish a new plant inside the Chicago area, there might be many persons who would be interested, but they would not know that the matter was under consideration. I am trying to say that the people who are interested will not be reached unless they are given notice. I say again to the Senator from Iowa that nothing in the section may need changing. I am merely stating that, upon a sesond reading, some doubts arise, and I wonder what the section actually provides.[29]

On July 16, 1954, Senator Hickenlooper introduced the committee amendment to section 189 which is substantially similar to the language now contained in the act. At the time of introducing this amendment, Senator Hickenlooper made the following remarks:

Mr. President, this section reincorporates the provisions for hearings formerly made part of section 181 but clearly specifies the types of Commission activities in which a hearing is to be required. The purpose of this revision is to specify clearly the circumstances in which hearings are to be held. The section also reincorporates the former provisions of section 189 dealing with judicial review. There

[27] Legislative History, p. 3073.
[28] Legislative History, p. 3073.
[29] Legislative History, p. 3073.

> is a slight change in wording merely to clarify the intent of Congress with respect to the extent the applicability of the act of December 29, 1950, and the inapplicability of section 10 of the Administrative Procedure Act.
>
> I state that this is a procedural operation, and does not go to the fundamentals of the so-called cross-patenting provision, or any provision of that kind.[30]

The amendment as proposed by Senator Hickenlooper was agreed to.

In the House, Mr. Cole introduced on July 24, 1954, a committee amendment which provided substantially the language incorporated in the final act, and this amendment was agreed to without debate.[31]

Section 25a. Divisions of the Atomic Energy Commission

As originally drafted, section 25 in H. R. 8862 and S. 3323 added an Inspection Division to the language contained in the previous act. Subsequently another subsection was added to establish an Office of General Counsel.

The main legislative development of interest to this study concerns the addition of language to establish a division or divisions "the primary responsibilities of which include the development and application of civilian uses of atomic energy." Originally, Mr. Holifield introduced in the House and Senator Humphrey in the Senate an amendment to establish "a division of civilian power application."

In the House on July 23, 1954, Mr. Cole spoke in opposition to this amendment as follows:

> Mr. Chairman, I hesitate to oppose this amendment, because it sounds so good. However, I consider it to be a part and parcel of those amendments that have been and will be offered, all of which are designed to put the Federal Government and the Atomic Energy Commission in the business of generating electricity, which is totally foreign to the purposes of this bill as it is presently written.
>
> Now, actually there is a Division within the Atomic Energy Commission that does the very thing which the gentleman from Illinois argues should be done by this Division which he proposes to create. There is a Reactor Division, a Reactor, Research, and Development Division. It is the function of that Division to encourage research and development in reactors which are designed to produce electrical energy.
>
> Now to repeat what I have said earlier, if the time comes when some of these reactors prove to be practical and feasible and economical and the Congress wants to put the Federal Government in the power business by using these reactors, that is the time to create a Division of Civilian Application of Atomic Power. So while I say the objective and the thought of the amendment is quite laudable, it is untimely, and I ask that it not be accepted.[32]

The amendment was not adopted by the House.[33]

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[30] Legislative History, pp. 3174–75.
[31] Legislative History, p. 2955.
[32] Legislative History, p. 2873.
[33] Legislative History, p. 2912.

In the Senate, Senator Humphrey spoke in favor of his proposed amendment on July 22, 1954, as follows:

> Mr. President, all kinds of licenses will be granted by the Commission. Needless to say, much of the preliminary work will have to be done by a responsible division of the Commission. A number of hearings will have to be held. Obviously there will have to be research and a consideration of the basic needs of the civilian economy in terms of use of atomic energy materials. Those atomic energy materials may be used for many purposes. They may be used for electric energy, to be sure, but also for other purposes. My amendment is a simple amendment. It makes it perfectly clear that in view of the impact of the proposed legislation, we should designate one part of the Atomic Energy Commission as a division for what we might call civil applications, in which division the Commission would be able to proceed forthwith with licensing and all the other details that come into that area of activity, and also to have a better organization in terms of the many uses of atomic energy.[34]

The amendment was tabled by the Senate on July 22, 1954.[35]

On July 26, 1954, the Senate again considered this subject and at that time Senator Humphrey introduced his revised amendment which would establish "a division or divisions the primary responsibilities of which include the development and application of civilian power." Upon motion of Senator Hickenlooper, the word "power" was changed to read "uses," and the amendment was agreed to.[36] The conference committee agreed to this amendment.

Section 188 of H. R. 8862 and S. 3323. Board of Review

The bills as originally introduced contained a section 188 establishing a Board of Review. This section read as follows:

> SEC. 188. REVIEW BOARD.—There is hereby established a Review Board within the Commission to review, on petition, any action of the Commission in connection with—
>
> a. the granting or denial of any license or construction permit or any application to transfer control;
>
> b. the revocation or modification of any license or construction permit;
>
> c. the issuance or modification of rules and regulations dealing with the activities of licensees of production or utilization facilities; and
>
> d. determinations of just compensation pursuant to the provisions of this Act.
>
> The Review Board shall be composed of not less than one and not more than three members, selected by the President with the advice and consent of the Senate. Each member shall serve for a term of seven years, and shall be removable by the President only for inefficiency, neglect of duty, or malfeasance in office. Each member shall receive compensation at the rate of $15,000 per annum, and shall be a citizen

[34] Legislative History, p. 3479.
[35] Legislative History, p. 3484.
[36] Legislative History, p. 3758.

> of the United States. No member shall be appointed until he has filed with the Joint Committee a complete and accurate record of all financial interests he may have in any company engaging in the manufacture or in the operation of production or utilization facilities, or in the production or utilization of special materials or in the discovery or process of source material. All such statements shall be made under oath and shall be kept current. No statement of any member of the Review Board shall be made public except by the express approval of the majority of the Joint Committee. The senior member of the Review Board shall be responsible for the administration of the Review Board. The Commission shall furnish to the Review Board the assistance which the Review Board may require, but no Commission employee assigned to work for the Review Board shall perform other duties for the Commission. Whenever the Review Board makes a final determination on any petition, the Commission shall forthwith enter an order embodying the determination of the Review Board, and such order shall be the final order of the Commission.[37]

This section was subsequently eliminated from H. R. 9757 and S. 3690, the June 30, 1954, drafts of the bill. However, during the hearings in May and June certain comments were made on this section. The American Bar Association committee, through Dean Stason, made the following comment:

> However, in lieu of such restricted revocation power, the proposed revision of the act makes use of another stabilizing technique, a very interesting administrative device, an independent intradepartmental review board, with broad authority to review any action of the Commission in revocation or modification of a license.
>
> This unique statutory technique, applying as it does to all licenses and permits issued under the act, has much that can be said in its favor. Greater administrative control of licenses is undoubtedly afforded, but at the same time, less assurance of continuity is given to the licensees.
>
> It remains to be seen whether or not large-scale investment can be attracted on such a basis, except when it can rely upon the credit of existing enterprises.[38]

Subsequently an exchange took place between Dean Stason and Mr. Holifield as follows:

> Representative HOLIFIELD. Mr. Stason, on page 3, you recommended the intradepartmental review board, which is contained in the act, I believe.
>
> Mr. STASON. Yes.
>
> Representative HOLIFIELD. Do you believe that an intradepartmental review board could be independent?
>
> Mr. STASON. The intradepartmental review board which is created by the act is independent in a certain respect. Since it is a part of the agency, it is obviously not completely independent. But there are degrees of independence. I

[37] Legislative History, p. 1582.
[38] Legislative History, p. 1693.

would say that the section setting up the review board, section 188, makes a genuine attempt to achieve reasonable independence. It is provided that no Commission employee assigned to work for the review board shall perform other duties for the Commission. And I believe that is a real attempt to achieve such independence.[39]

Later during the hearings appears a comment on the review board by Mr. Biemiller, representing the A. F. of L. This section again came up upon questioning by Mr. Holifield as follows:

Representative HOLIFIELD. In the field of independent review of administrative actions in regard to licensing the limited number of reactor builders in the next few years, you have not commented upon the section which in the opinion of many does not give independent and objective review of those administrative actions.

There is a cloudy area there which might well be justified by administrative discretion, but which would be inequitable in its application and without recourse to proper review.

Mr. BIEMILLER. As I recall, the bill provides for a review board in the Commission itself.

Representative HOLIFIELD. That is right.

Mr. BIEMILLER. Which I grant you seems to be a rather unusual kind of procedure.

Representative HOLIFIELD. That is right, it does provide and undoubtedly the members of the review board would be recommended by the Chairman of the Commission as he is the chief adviser to the President on atomic energy affairs, and it could very well be that those men that were recommended to the review board within the Commission might be of the same type of thinking as the Chairman of the Commission or they might not feel completely free to express an independent judgment.

In your opinion on anything as important as granting these limited number of licenses, would it not be better for those grants of licenses to be reviewable by a court of equity rather than another administrative board within the Commission?

Mr. BIEMILLER. That would seem to be a very reasonable proposal also.[40]

General remarks

In addition to the above references to particular sections of the Act, there was some discussion during the hearings concerning the mixed functions of the Atomic Energy Commission.

When the Commission appeared before the Joint Committee the following question was asked by Mr. Holifield to Dr. Smyth, one of the AEC Commissioners:

First I think we might establish the nature of the uniqueness of this Commission in relation to other commissions of Government such as the FCC, the ICC, the SEC, and other quasi-judicial and quasi-regulatory bodies. This atomic energy project is also an operating, a manufacturing,

[39] Legislative History, p. 1696.
[40] Legislative History, p. 1924.

a producing agency as well as being quasi-judicial and quasi-regulatory body; is that not true?

Dr. SMYTH. That is correct.[41]

Later in the discussion the following exchange between Mr. Holifield and Dr. Smyth took place:

Representative HOLIFIELD. * * * Now the Commission is a policymaking body in the specific field of carrying out the general policies set forth in the Atomic Energy Act by the Congress; is that not right?

Dr. SMYTH. Yes.

Representative Holifield. Is it also a regulatory body in that it is authorized to make such regulations and rules and institute such procedures as will cause this project to move forward efficiently, is that not true?

Dr. SMYTH. Yes.

Representative HOLIFIELD. It is quasi-judicial as well as quasi-legislative through its regulatory function in the field of making determinations of the security of personnel; is that not true?

Dr. SMYTH. Yes, sir.

Representative HOLIFIELD. And when the field is broadened by new duties in the field of licensing industrial reactors it will broaden that field of administrative duties to the point where you will assume a quasi-judicial function in the determination between applicants for licenses; is that not true?

Dr. SMYTH. Yes, sir.[42]

APPENDIX 3

EXTRACTS FROM AEC REGULATIONS

Extracts are reprinted in this appendix from the following AEC regulations, and amendments to regulations:

A. Part 2 on Rules of Practice, as published in the Federal Register on February 4, 1956;

B. Amendment to part 2, establishing Subpart H, Special Procedures Applicable to Adjudicatory Proceedings Involving Restricted Data, as published in the Federal Register on December 8, 1956;

C. Part 9 on Public Records, as published in the Federal Register on December 8, 1956;

D. Part 50 on Licensing of Production and Utilization Facilities, as published in the Federal Register on January 19, 1956.

[41] Legislative History, p. 2427.
[42] Legislative History, pp. 2427-2428.

A. Part 2—Rules of Practice

(Reprinted from Federal Register, February 4, 1956)

(Sections which have been reprinted in whole or in part are indicated in the index by an asterisk)

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AUTHORITY: §§ 2.1 to 2.790 issued under sec. 161, 68 Stat. 948, 42 U. S. C. 2201.

DESCRIPTION OF PART

§ 2.1 *Scope.* This part governs the conduct of all proceedings before the Atomic Energy Commission involving licensing and licenses, including patent licensing under section 153 of the Atomic Energy Act of 1954 but excluding all other patent matters.

§2.2 *Subparts.* Each of the subparts which precedes Subpart G of this part sets forth special rules applicable to the type of proceeding described in the opening section of the subpart. Subpart G of this part sets forth general rules applicable to all types of proceedings and should be read in conjunction with the subpart governing the particular proceeding.

§ 2.3 *Resolution of conflicts.* In any conflict between a general rule in Subpart G of this part and a special rule in another subpart applicable to a particular type of proceeding, the special rule will govern.

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SUBPART A—PROCEDURE ON APPLICATIONS FOR ISSUANCE, AMENDMENT OR TRANSFER OF A LICENSE OR CONSTRUCTION PERMIT AND RENEWAL OF A LICENSE

§ 2.100 *Applicability of subpart.* The provisions of this subpart prescribe the procedure covering applications for the issuance of a license, construction permit, amendment of a license or construction permit at the request of the holder, transfer of a license or construction permit, and renewal of a license. Reference should also be made to Subpart G of this part which sets forth the rules applicable to all types of proceedings.

§ 2.101 *Administrative examination of applications, notice to others, informal conferences.* Applications described in § 2.100 will be given a docket or other identifying number and routed to the appropriate AEC offices for administrative examination. AEC will give to others such notice of the filing of the application as is required under the applicable regulations of this chapter and such additional notices as it deems appropriate. The applicant may be required to submit addi-

tional information and may be requested to confer informally regarding the application.

§ 2.102 *Action on applications, hearings.* (a) The AEC will, upon request of the applicant or an intervener, and may upon its own initiative, direct the holding of a formal hearing prior to taking action on the application. If no prior formal hearing has been held and no notice of proposed action has been served as provided in paragraph (b) of this section, AEC will direct the holding of a formal hearing upon receipt of a request therefor from the applicant or an intervener within 30 days after the issuance of a license or other approval or a notice of denial.

(b) In such cases as it deems appropriate, AEC may cause to be served upon the applicant, and published, a notice of proposed action upon his application and shall cause copies thereof to be served upon interveners or others entitled to or requesting notification. The notice shall state the terms of the proposed action. If a formal hearing has not been held prior to issuance of the notice, AEC will direct the holding of a formal hearing upon the request of the applicant or an intervener received within fifteen days following the service of the notice.

§ 2.103 *Effect of timely renewal applications.* In the case of an application for renewal, if the licensee has made application for the renewal of a subsisting license at least 30 days prior to its expiration date, the license shall not be deemed to have expired until such application shall have been determined.

Subpart B—Procedure for imposing requirements by order, or for modification, suspension, or revocation of a license or construction permit

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SUBPART G—RULES OF GENERAL APPLICABILITY

COMMON PROVISIONS

§ 2.700 *Filing of papers; when complete.* Unless otherwise specified, papers required to be filed with AEC shall be filed with the Atomic Energy Commission, 1901 Constitution Avenue NW., Washington 25, D. C.

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§ 2.708 *Hearings, formal and informal.* Hearings will be either formal or informal. Formal hearings will be held in cases of adjudication, as that term is used in the Administrative Procedure Act, unless the parties otherwise agree, and in such other cases as may specifically be directed. Informal hearings will normally be held for the purposes of obtaining necessary or useful information, and affording participation by interested persons, in the formulation, amendment, or rescission of rules and regulations.

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INFORMAL HEARINGS

§ 2.720 *Informal hearing procedure.* The procedure to be followed in informal hearings shall be such as will best serve the purpose of the hearing. For example, an informal hearing may consist of the submission of written data, views, or arguments with or without oral

argument, or may partake of the nature of a conference, or may assume some of the aspects of a formal hearing in which the subpena of witnesses and the production of evidence may be permitted or directed.

FORMAL HEARINGS

§ 2.730 *Parties.* The parties to a formal hearing shall be AEC, the licensee or applicant as the case may be, and any person permitted to intervene pursuant to § 2.705.

§ 2.731 *Limited appearances by persons not parties.* With the consent of the presiding officer, limited appearances may be entered without request for or grant of permission to intervene by persons who are not parties to a hearing. With the consent of the presiding officer, and on due notice to the parties, such persons may make oral or written statements of their position on the issues involved in the proceeding, but may not otherwise participate in the hearing.

§ 2.732 *Designation of presiding officer, disqualification, unavailability.* (a) There will be designated to preside at hearings one or more members of the Commission, or an officer or board to whom has been delegated final authority in the matter with which the hearing is concerned, or a hearing examiner appointed pursuant to section 11 of the Administrative Procedure Act. To the extent practicable, the name of the presiding officer designated will be included in the notice of hearing or, if omitted from the notice, made known to the parties or public as soon as is possible thereafter, prior to the holding of the hearing.

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§ 2.733 *Powers of presiding officers.* From the date of his designation in a case until transfer of the case to the Commission, or expiration of the time for filing exceptions to his intermediate decision, a presiding officer shall have authority in the case to:

(a) Administer oaths and affirmations;
(b) Examine witnesses;
(c) Rule upon offers of proof and receive evidence;
(d) Issue subpenas authorized by law;
(e) Take or cause depositions to be taken;
(f) Regulate the course of the hearing;
(g) Yold appropriate conferences before or during the hearing;
(h) Dispose of procedural requests or similar matters;
(i) Within his discretion or upon direction of the Commission, certify questions to the Commission for its consideration and disposition;
(j) Make the intermediate decision in conformity with § 2.751;
(k) Take any other action consistent with the rules of the Commission, the Administrative Procedure Act, and the Atomic Energy Act of 1954.

§ 2.734 *Separation of functions.* (a) Hearing examiners appointed pursuant to section 11 of the Administrative Procedure Act shall perform no duties inconsistent with their duties and responsibilities as presiding officers, and shall not be responsible to or subject to the supervision or direction of any officer or employee engaged in the performance of investigative or prosecuting functions for AEC.

(b) In any case of adjudication other than initial licensing,

(1) The presiding officer, unless he is a member of the Commission or officer having final authority in the case, may not consult any person

or party on any fact in issue except upon notice and opportunity for all parties to participate, save to the extent required for the disposition of ex parte matters as authorized by law;

(2) No officer or employee of AEC, other than a member of the Commission or officer having final authority in the case, who has engaged in the performance of any investigative or prosecuting function in the case or a factually related case may participate or advise in the intermediate or final decision, except as witness or counsel in the formal hearing.

§ 2.735 *Notice of hearing.* (a) Whenever a hearing is granted, AEC will give timely notice of the hearing to all parties and to other persons, if any, entitled to notice. Such notice will state the time, place, and nature of the hearing; the legal authority and jurisdiction under which the hearing is to be held; the matters of fact and law asserted or to be considered, which will be identified as the "Specification of Issues"; and a request for an answer. The time and place for hearing will be fixed with due regard for the convenience and necessity of the parties or their representatives.

(b) The notice of hearing may be a separate notice or when appropriate may be embodied in an order to show cause or other order.

(c) The procedure for issuance of the notice of hearing and specifying of the issues by AEC shall not affect the burden of proof.

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§ 2.740 *Prehearing conferences.* (a) In order to provide opportunity for the settlement of a proceeding or any of the issues therein, or for agreement upon procedural and other matters, there may be held at any time prior to or during a hearing, upon due notice of the time and place given to all parties, such conferences of the parties as, in the discretion of the presiding officer, time, the nature of the proceeding, and the public interest may permit.

(b) Action taken at a prehearing conference may be recorded for appropriate use at the hearing in the form of a written stipulation among the parties reciting the matters upon which there has been agreement. The stipulation shall be binding upon the parties thereto.

§ 2.741 *Amendments.* At any time prior to the time fixed for hearing but not later than five days prior, the party responsible for the specification of issues, answer, or reply, respectively, may amend the same by filing an amendment and serving it upon the parties. At any time thereafter, amendments may be permitted in the discretion of the presiding officer upon such terms as he shall prescribe.

§ 2.742 *Hearings public.* Except as may be required pursuant to section 181 of the act, hearings shall be public.

NOTE: Provisions with respect to parallel procedures pursuant to section 181 of the Act will be published at an early date.

§ 2.743 *Official reporter, transcript.* Hearings shall be reported under the supervision of the presiding officer, stenographically or by other means, by an official reporter, who may be designated from time to time by AEC or may be a regular employee of AEC. The transcript of the report shall be a part of the record and the sole official transcript of the proceeding. Except as limited pursuant to section 181 of the act or order of the Commission, the transcript will be open for inspection at AEC offices and copies may be obtained from the official reporter upon payment of the charges fixed therefor. Errors in the transcript may be corrected by order of the presiding officer

following a notice of motion to correct filed and served on the affected parties within 10 days after notice that the completed transcript has been received by AEC, or as otherwise agreed upon by the parties and approved by the presiding officer.

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§ 2.746 *Order of procedure.* The presiding officer or the Commission, as the case may be, will designate the order of procedure at hearings including the order in which interveners will be heard. Normally, at hearings for the grant, amendment or transfer of a license or construction permit or the renewal of a license, the applicant will open and close; and at hearings for the revocation, suspension, or AEC initiated modification of a license or construction permit, AEC will open and close.

* * * * * * *

§ 2.748 *Interlocutory appeals to the Commission from rulings of presiding officers.* Except as may be otherwise specifically provided, the rulings of a presiding officer may not be appealed from during the time the proceeding is pending before him, except in extraordinary circumstances where in the judgment of the presiding officer prompt decision by the Commission is necessary to prevent detriment to the public interest or unusual delay or expense. In such instances the matter shall be referred for determination forthwith by the presiding officer to the Commission.

§ 2.749 *Proposed findings and conclusions.* At the close of the reception of evidence, or within a reasonable time thereafter as fixed by the presiding officer, the parties may file for consideration proposed findings and conclusions with supporting reasons, briefs, or memoranda of law. Such proposals shall contain exact references to the record and authorities relied on.

* * * * * * *

§ 2.751 *Intermediate decisions and their effect.* (a) After hearing, the presiding officer will ordinarily render an intermediate decision, which decision shall become final unless exceptions are taken in accordance with § 2.752 or the Commission has directed that the record be certified to it for final decision.

(b) However, in any case involving an application for an initial license the Commission may direct that the presiding officer certify the record to it without an intermediate decision. In such case the Commission may:

(1) Direct a responsible officer to prepare an intermediate decision which will not become final until the Commission acts upon it; or

(2) Prepare its own intermediate decision, which shall become final unless exceptions are taken in accordance with § 2.752; or

(3) Omit an intermediate decision upon a finding on the record that due and timely execution of the Commission's functions imperatively and unavoidably so requires.

(c) Each intermediate decision shall be in writing and shall contain:

(1) Findings and conclusions, with the reasons or basis therefor upon all material issues of fact, law, or discretion presented on the record;

(2) The ruling upon each proposed finding or conclusion filed by a party;

(3) All facts officially noticed pursuant to § 2.750, relied upon in the decision;

(4) The appropriate rule, order, sanction, relief, or denial thereof, with the effective date;

(5) The time within which exceptions to the decision may be filed, the time in which briefs in support of or in opposition to the exceptions may be filed and, in the case of an intermediate decision which may become final unless exceptions are filed, the date when such decision will become final in the absence of exceptions thereto.

(d) The intermediate decision, other than an oral decision, shall be served upon all parties to the proceeding. In the case of an oral decision, the presiding officer shall apprise the parties before its pronouncement of his intention, and the time when he proposes, to render an oral decision.

(e) Intermediate decisions shall become a part of the record.

§ 2.752 *Exceptions to intermediate decisions.* Within 20 days after service of any intermediate decision, or such longer period as may be fixed therein, any party to a hearing may file exceptions to the decision with the Commission, and shall serve copies of such exceptions on all other parties to the hearing. Each exception shall be separately numbered, shall identify the part of the intermediate decision to which objection is made, shall designate by specific reference the portions of the record relied upon in support of the objections, and shall state the grounds for the exception including the citation of authorities in support thereof. Any objection to a ruling, finding, or conclusion which is not made part of the exceptions shall be deemed to have been waived, and the Commission need not consider such objections.

§ 2.753 *Briefs and oral arguments before the Commission.* (a) Within such period after service of an intermediate decision as may be fixed therein, any party to a proceeding may file a brief before the Commission in support of his exceptions to the decision or in opposition to the exceptions filed by any other party.

(b) In its discretion the Commission may allow oral argument upon the request of a party made in his exceptions or brief, or upon its own initiative.

§ 2.754 *Final decision.* (a) Upon submission of a case to the Commission for final decision, the Commission will normally consider the whole record. But when reviewing an intermediate decision, the Commission may limit the issues to be reviewed, and give consideration only to those findings and conclusions to which exceptions have been filed.

(b) The final decision shall be in writing and shall contain:

(1) A statement of findings and conclusions, with the reasons or basis therefor, upon all the material issues of fact, law, or discretion presented;

(2) All facts officially noticed pursuant to § 2.750, relied upon in this decision;

(3) The ruling on each relevant and material exception filed;

(4) The appropriate rule, order, sanction, relief, or denial thereof, with the effective date.

(c) The decision shall be served upon all parties to the proceeding.

§ 2.755 *Waiver of procedures or intermediate decisions.* The parties to any hearing may agree to waive any one or more of the procedural steps or intermediate decisions which would otherwise precede the teaching of a final decision by the Commission.

§ 2.756 *Petition for reconsideration.* A petition for reconsideration of a final decision after hearing may be filed by any party to the hearing, within 10 days after the decision has been issued and served. However, no petition may be filed with respect to an intermediate decision which has become final through failure to file exceptions thereto. The petition for reconsideration shall state specifically wherein the matter determined is claimed to be erroneous, the grounds relied upon, and the relief sought. Within 7 days after a petition for reconsideration has been filed, any party to the hearing may file an answer in opposition to or support of the petition. Neither the filing nor the granting of the petition shall operate as a stay of the decision unless so ordered by the Commission.

PUBLIC RULE MAKING

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AVAILABILITY OF OFFICIAL RECORDS

§ 2.790 *Public inspection, exceptions, requests for withholding.* (a) Except as provided in paragraph (b) of this section or as required to protect Restricted Data or defense information, matters of official record in any proceeding subject to this part (including applications for licenses, licenses, rules, regulations, orders, transcripts of hearings, exhibits received in evidence, and decisions) will be made available for public inspection.

(b) The AEC may withhold any document or part thereof from public inspection if disclosure of its contents is not required in the public interest and would adversely affect the interest of a person concerned. Such withholding from public inspection shall not, however, affect the right of persons properly and directly concerned to inspect the document.

(c) Persons requesting that documents or information therein be withheld from public disclosure shall make prompt application identifying the material and giving the reasons. Where the applicant is responsible for the preparation of the document, he shall insofar as is possible segregate in a separate paper the information for which the special treatment is requested. The AEC may honor the request upon a finding that public inspection is not required in the public interest and would adversely affect the interest of the person concerned. If the request is denied, the applicant will be notified thereof with a statement of the reasons.

Dated at Washington, D. C., this 31st day of January 1956.

K. E. FIELDS,
General Manager.

(From Federal Register, December 8, 1956)

B. PART 2—RULES OF PRACTICE

MISCELLANEOUS AMENDMENTS

1. The following paragraph is added to § 2.790:

(d). Matters of official record in any proceedings subject to this part, which are classified as Restricted Data and are within a category

specified in Appendix "A", Part 25 of this chapter, will be made available for inspection by access permittees in accordance with the regulations in Parts 25 and 95 of this chapter.

2. The following subpart is added:

SUBPART H—SPECIAL PROCEDURES APPLICABLE TO ADJUDICATORY PROCEEDINGS INVOLVING RESTRICTED DATA

(Sections which have been reprinted in whole or in part are indicated in the index by an asterisk)

Sec.

2.800 Purpose.*
2.801 Scope.*
2.802 Definitions.
2.803 Protection of Restricted Data in proceedings under this subpart.*
2.804 Classification assistance.*
2.805 Access to Restricted Data for parties—security clearances.*
2.806 Obligations of parties to avoid introduction of Restricted Data.
2.807 Notice of intent to introduce Restricted Data.*
2.808 Contents of notice of intent to introduce Restricted Data.
2.809 Rearrangement of suspension of proceedings.*
2.810 Unclassified statements required.*
2.811 Admissibility of Restricted Data.*
2.812 Weight to be attached to classified evidence.*
2.813 Review of Restricted Data received in evidence.*
2.814 Access under Part 25 of this chapter not affected.*

§ 2.800 *Purpose.* The regulations in this subpart are issued pursuant to section 181 of the Atomic Energy Act of 1954 (68 Stat. 919) to provide such parallel procedures in adjudicatory proceedings subject to this part as will effectively safeguard and prevent disclosure of Restricted Data to persons not authorized to receive it, with minimum impairment of the procedural rights which would otherwise be available to the parties if such information were not involved.

NOTE.—Parallel procedures applicable to classified information other than Restricted Data are under consideration.

§ 2.801 *Scope.* The provisions of this subpart apply to all proceedings under this part involving adjudication as that term is used in the Administrative Procedure Act, except that §§ 2.807 to 2.814, inclusive, apply to such proceedings only upon the service of a notice of hearing pursuant to § 2.735.

* * * * * * *

§ 2.803 *Protection of Restricted Data in proceedings under this subpart.* Nothing contained in this subpart shall relieve any person from safeguarding Restricted Data in accordance with all applicable provisions of laws of the United States and rules, regulations or orders of any Government agency.

§ 2.804 *Classification assistance.* Upon request of any party or of the presiding officer, AEC will designate a representative to advise and assist the presiding officer and the parties with respect to security classification of information and the safeguards to be observed.

§ 2.805 *Access to Restricted Data for parties—Security clearances—*(a) *Access to Restricted Data introduced into proceedings.* (1) Restricted Data which is within a category specified in Appendix "A", Part 25 of this chapter, and which is introduced into a proceeding subject to this subpart, will be made available to any party to the proceeding who has an appropriate security clearance, to appropriately cleared counsel for a party, and to such other appropriately cleared individuals (including employees of a party) as a party intends to use in connection with the preparation or presentation of his case.

(2) Other Restricted Data introduced into a proceeding subject to this subpart will be made available to any interested party having an appropriate security clearance; to appropriately cleared counsel for an interested party; and to such additional appropriately cleared persons (including employees of a party) as the AEC or the presiding officer determines are needed by such interested party for adequate preparation or presentation of his case. Where the interest of the party will not be prejudiced, action upon an application for access under this subparagraph may be postponed until after a notice of hearing, answers and replies have been served pursuant to §§ 2.735 to 2.737, inclusive.

(3) Any party desiring access to Restricted Data introduced into the record of a proceeding subject to this subpart should submit an application for order granting access pursuant to this section.

(b) *Access to Restricted Data not introduced into proceedings.* (1) Upon application showing that access to Restricted Data may be required for the preparation of a party's case, and except as provided in paragraph (h) of this section, the AEC (or the presiding officer if one has been appointed) will issue an order granting access to such Restricted Data to the party upon his obtaining an appropriate security clearance, to appropriately cleared counsel for the party and to such other appropriately cleared individuals as may be needed by the party for the preparation of his case.

(2) Where the interest of the party applying for access will not be prejudiced, the AEC or presiding officer may postpone action upon an application pursuant to this paragraph until after a notice of hearing, answers and replies have been served pursuant to §§ 2.735 to 2.737.

(c) The AEC will process requests for appropriate security clearances in reasonable numbers pursuant to this section. No charge will be made by the AEC for costs of security clearance pursuant to this section.

* * * * * * *

§ 2.807 *Notice of intent to introduce Restricted Data.* (a) If, at the time of service of a notice of formal hearing pursuant to § 2.735, it appears to the AEC that it will be impracticable for the AEC to avoid the introduction of Restricted Data into the proceeding, the AEC will include in the notice of hearing a notice of intent to introduce Restricted Data.

(b) If, at the time of service of an answer pursuant to § 2.736, it appears to the party serving the answer that it will be impracticable for the party to avoid the introduction of Restricted Data into the proceeding, the party shall include in the answer a notice of intent to introduce Restricted Data into the proceeding.

(c) If, at any later stage of a proceeding subject to this subpart, it appears to any party that it will be impracticable for the party to avoid the introduction of Restricted Data into the proceeding, the party shall give prompt notice of intent to introduce Restricted Data into the proceeding.

(d) Restricted Data shall not be introduced into a proceeding after the service of a notice of hearing unless a notice of intent has been served and filed in accordance with § 2.808 except that in the discretion of the presiding officer Restricted Data may be introduced without

the service and filing of such notice where it is clear that no party will be prejudiced by such introduction.

§ 2.808 *Contents of notice of intent to introduce Restricted Data.* (a) A notice of intent to introduce Restricted Data shall be filed with the AEC and copies served upon all parties to the proceeding. Such notice shall be unclassified and, to the extent consistent with classification requirements, shall contain the following information:

(1) The subject matter of the Restricted Data which it is anticipated will be involved;

(2) The level of classification of such information (e. g., Confidential, Secret);

(3) The stage of the proceeding at which he anticipates a need to introduce such information; and

(4) The relevance and materiality of such information.

(b) In the discretion of the presiding officer, such notice, when required by § 2.807 (c), may be given orally.

§ 2.809 *Rearrangement or suspension of proceedings.* In any proceeding where a party gives notice of intent to introduce Restricted Data, and the presiding officer determines that any other interested party does not have appropriate security clearances, the presiding officer may in his discretion:

(a) Rearrange the normal order of the proceeding in such a manner as to give such interested parties opportunity to obtain appropriate security clearances with minimum delay in completion of the proceeding; or

(b) Suspend the proceeding or any portion thereof until all interested parties have had opportunity to obtain appropriate security clearances: *Provided*, That no proceeding shall be suspended for such reason for more than 100 days except with the consent of all parties or upon a determination by the presiding officer that further suspension of the proceeding would not be contrary to the public interest; or

(c) Take such other action as he determines to be appropriate.

§ 2.810 *Unclassified statements required.* (a) Whenever Restricted Data is offered in evidence at a formal hearing, the party offering such information shall submit to the presiding officer and to all parties to the proceeding an unclassified statement setting forth the information contained in the classified matter as accurately and completely as possible.

* * * * *

§ 2.811 *Admissibility of Restricted Data.* Presiding officers shall not receive any Restricted Data in evidence unless:

(a) The relevance, materiality and competence of such information is clearly established; and

(b) The exclusion of such information would prejudice the interests of a party or the public interest.

§ 2.812 *Weight to be attached to classified evidence.* In considering the weight and effect of any Restricted Data received in evidence to which an interested party has not had opportunity to receive access, the presiding officer and the Commission shall give to such evidence such weight as, under the circumstances, is appropriate, taking into consideration any lack of opportunity for such parties to rebut or impeach the evidence.

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§ 2.813 *Review of Restricted Data received in evidence.* At the close of the reception of evidence, the presiding officer shall review the record and shall direct that any Restricted Data therein be expunged from the record where such expunction would not prejudice the interests of a party or the public interest. Such directions by the presiding officer will be considered by the Commission in reviewing the case where appropriate exceptions are filed to the directions.

§ 2.814 *Access under Part 25 of this chapter not affected.* Nothing contained in this subpart or any order issued pursuant hereto shall be deemed to abridge access to Restricted Data to which any person may be entitled under the regulations in Part 25 of this chapter.

Dated at Washington, D. C., this 4th day of December 1956.

K. E. FIELDS, *General Manager.*

C. PART 9—PUBLIC RECORDS

[From Federal Register, December 8, 1956]

Notice is hereby given that the Atomic Energy Commission has adopted the following rules. Because these rules may be needed in pending proceedings, the Atomic Energy Commission has found that good cause exists that the rules should be made effective upon publication without the customary 30-day period provided by section 4 (c) of the Administrative Procedure Act, Public Law 404, 79th Congress, 2d Session.

(Sections which have been reprinted in whole or in part are indicated in the index by an asterisk)

Sec.

9.1 Scope.*
9.2 Definitions.*
9.3 Inclusion.*
9.4 Exceptions.*
9.5 Location.
9.6 Copies.
9.7 Production or disclosure.*

AUTHORITY: §§ 9.1 to 9.7 issued under sec. 161, 68 Stat. 948; 42 U. S. C. 2201. Interpret or apply sec. 3, 60 Stat. 238, 5 U. S. C. 1002.

§ 9.1 *Scope.* This part prescribes the rules governing the Atomic Energy Commission's public records which relate to any proceeding subject to Part 2 and Part 25 of this chapter.

§ 9.2 *Definitions.* As used in this part:

(a) "Public records" means those documents in the custody of the AEC which are available for public inspection.

(b) "Filings" means:

(1) Applications or other documents seeking Commission action, notices, orders, motions, answers, replies, objections, stipulations, exceptions, proofs of service, briefs, transcripts of hearings, exhibits received in evidence, decisions, licenses, permits, rules, and regulations.

(2) Exhibits, attachments and appendices to, amendments and corrections of, supplements to, and transmittals and withdrawals of any of the foregoing.

* * * * * * *

(f) "AEC personnel" means employee, consultants, and members of advisory boards of the AEC.

§ 9.3 *Inclusions.* Except as excluded by § 2.403 of this chapter, the following matters are included in the public records:

(a) All filings in proceedings.

(b) All correspondence or portions of correspondence to and from AEC regarding the issuance, amendment, transfer, renewal modification, suspension, or revocation of a license or permit or regarding a rule-making proceeding subject to Part 2 of this chapter.

(c) All correspondence or portions of correspondence to and from AEC as to the interpretation or applicability of any statute, rule, regulation, order, license, or permit; and letters of opinion as to such matters signed by the General Counsel.

(d) All filings in court proceedings to which the AEC is a party and all correspondence with the courts of clerks of the court.

§ 9.4 *Exceptions.* The following are not included in the public records:

(a) Documents withheld in accordance with the provisions of § 2.790 (b) and (c) of this chapter.

* * * * * * *

(c) Intra-agency and inter-agency communications, including memoranda, reports, correspondence, and staff papers prepared by members of the Commission, AEC personnel, or by any other Government agency for use within the AEC or within the executive branch of the Government.

* * * * * * *

(j) Any other document involving matters of internal agency management.

* * * * * * *

§ 9.7 *Production or disclosure.* (a) AEC personnel shall not produce or disclose the contents of any material that falls within the scope of § 9.4, except as provided in paragraph (b) of this section.

(b) AEC personnel served with the subpoena requiring the production or disclosure of any material that falls within the scope of § 9.4 shall appear in response thereto and shall respectfully decline to produce or disclose the material called for, basing refusal upon this section: *Provided, however,* That the Commission or the General Manager may authorize the production or disclosure of any material that falls within the scope of *k* 9.4 if it is deemed that such disclosure is not contrary to the public interest. Any person who is served with such a subpoena shall promptly advise the AEC thereof and of any relevant facts and the Commission or the General Manager will give such instructions as it is deemed advisable.

Dated at Washington, D. C., this 4th day of December 1956.

K. E. Fields, *General Manager.*

D. Part 50—Licensing of Production and Utilization Facilities

(From Federal Register, January 19, 1956)

Effective 30 days after publication in the Federal Register, Part 50, 10 CFR, "Control of Facilities for the Production of Fissionable Material," is hereby amended to read as follows:

(Sections which have been reprinted in whole or in part are indicated in the index by an asterisk)

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50.1 Basis and purpose.*
50.2 Definitions.
50.3 Interpretations.

REQUIREMENT OF LICENSE, EXCEPTIONS

50.10 License required.*
50.11 Exceptions and exemptions from license.
50.12 Specific exemptions.

CLASSIFICATION AND DESCRIPTION OF LICENSES

50.20 Two classes of licenses.*
50.21 Class 104 licenses; for medical therapy and research and development facilities.*
50.22 Class 103 licenses; for commercial and industrial facilities.*
50.23 Construction permits.*

APPLICATIONS FOR LICENSES, FORM, CONTENTS, INELIGIBILITY OF CERTAIN APPLICANTS

50.30 Applications for licenses, oath or affirmation.*
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50.32 Elimination of repetition.*
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50.41 Additional standards for class 104 licenses.
50.42 Additional standards for class 103 licenses.
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50.51 Duration of license, renewal.*
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ALLOCATION OF SPECIAL NUCLEAR MATERIAL

50.60 Allocation of special nuclear material.

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50.70 Inspections.*
50.71 Maintenance of records, making of reports.*

TRANSFER OF LICENSES-CREDITORS' RIGHTS; SURRENDER OF LICENSES

[§§ 50.80 to 50.89 reserved]

AMENDMENT OF LICENSE OR CONSTRUCTION PERMIT AT REQUEST OF HOLDER

50.90 Application for amendment of license or construction permit.*
50.91 Issuance of amendment.*

REVOCATION, SUSPENSION, MODIFICATION, AMENDMENTS OF LICENSES AND CONSTRUCTION PERMITS, EMERGENCY OPERATIONS BY THE COMMISSION

Sec.

50.100 Revocation, suspension, modification of licenses and construction permits for cause.*
50.101 Retaking possession of special nuclear material.*
50.102 Commission operation after revocation.*
50.103 Suspension and operation in war or national emergency.*

ENFORCEMENT

50.110 Violations.*

GENERAL PROVISIONS

§ 50.1 *Basis purpose, and procedures applicable.* The regulations in this part are promulgated by the Atomic Energy Commission, pursuant to the Atomic Energy Act of 1954 (68 Stat. 919), to provide for the licensing of production and utilization facilities.

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REQUIREMENT OF LICENSE, EXCEPTIONS

§ 50.10 *License required.* Except as provided in § 50.11, no person within the United States shall transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export any production or utilization facility except as authorized by a license issued by the Commission.

* * * * * * *

CLASSIFICATION AND DESCRIPTION OF LICENSES

§ 50.20 *Two classes of licenses.* Licenses will be issued to named persons applying to the Commission therefor, and will be either class 104 or class 103.

§ 50.21 *Class 104 licenses; for medical therapy and research and development facilities.* A class 104 license will be issued, to an applicant who qualifies, for any one or more of the following: to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation:

(a) A utilization facility for use in medical therapy; or

(b) A production or utilization facility involved in the conduct of research and development activities leading to the demonstration of the practical value of the facility for industrial or commercial purposes; or

(c) A production or utilization facility, which is useful in the conduct of research and development activities of the types specified in section 31 of the act, and which is not a facility of the type specified in subparagraph (b) of this section.

§ 50.22 *Class 103 licenses; for commercial and industrial facilities,* A class 103 license will be issued, to an applicant who qualifies, for any one or more of the following: to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation, a production or utilization facility which is of a type found in writing by the Commission, to have been sufficiently developed to be of practical value for industrial or commercial purposes.

§ 50.23 *Construction permits.* A construction permit for the construction of a production or utilization facility will be issued prior to the issuance of a license if the application is otherwise acceptable, and will be converted upon due completion of the facility and Commission action into a license as provided in § 50.56. A construction permit for the alteration of a production or utilization facility will be issued prior to the issuance of an amendment of a license, if the application for amendment is otherwise acceptable, as provided in § 50.91.

APPLICATIONS FOR LICENSES, FORM, CONTENTS, INELIGIBILITY OF CERTAIN APPLICANTS

§ 50.30 *Applications for licenses, oath or affirmation.* Each application for a license, including whenever appropriate a construction permit, should be filed in sextuplicate with the Commission at 1901 Constitution Avenue, Washington 25, D. C., Attention: Division of Civilian Application. Each application shall be signed by the applicant or duly authorized officer thereof under oath or affirmation.

§ 50.31 *Combining applications.* An applicant may combine in one his several applications for different kinds of licenses under the regulations in this chapter.

§ 50.32 *Elimination of repetition.* In his application, the applicant may incorporate by reference information contained in previous applications, statements or reports filed with the Commission: *Provided,* That such references are clear and specific.

§ 50.33 *Contents of applications; general information.* Each application shall state:

(a) Name of applicant;

(b) Address of applicant;

(c) Description of business or occupation of applicant;

(d) (1) If applicant is an individual, state citizenship.

(2) If applicant is a partnership, state name, citizenship and address of each partner and the principal location where the partnership does business.

(3) If applicant is a corporation or an unincorporated association, state

(i) The state where it is incorporated or organized and the principal location where it does business;

(ii) The names, addresses and citizenship of its directors and of its principal officers;

(iii) Whether it is owned, controlled, or dominated by an alien, a foreign corporation, or foreign government, and if so, give details.

(4) If the applicant is acting as agent or representative of another person in filing the application, identify the principal and furnish information required under this paragraph with respect to such principal.

(e) The class of license applied for, the use to which the facility will be put, the period of time for which the license is sought, and a list of other licenses, except operator's licenses, issued or applied for in connection with the proposed facility.

(f) The financial qualifications of the applicant to engage in the proposed activities in accordance with the regulations in this chapter. If the application is also for special nuclear material license pursuant to the regulations in Part 70 of this chapter, information should be

included with respect to the applicant's financial qualifications to assume responsibility for the payment of Commission charges for special nuclear material.

(g) The technical qualifications of the applicant to engage in the proposed activities in accordance with the regulations in this chapter.

(h) If the applicant proposes to construct or alter a production or utilization facility, the application shall state the earliest and latest dates for completion of the construction or alteration.

(i) If the proposed activity is the generation and distribution of electric energy under a class 103 license, a list of the names and addresses of such regulatory agencies as may have jurisdiction over the rates and services of the proposed activity, and of those municipalities, private utilities, public bodies, and cooperatives, which are within transmission distance and which are authorized to engage in the distribution of electric energy within the area.

(j) If the application contains Restricted Data or other defense information, it shall be prepared in such manner that all Restricted Data and other defense information are separated from the unclassified information.

§ 50.34 *Contents of applications; technical information hazards summary report.* Each application shall state the following technical information:

(a) A description of the chemical, physical, metallurgical, or nuclear process to be performed, and a statement of the kind and quantity of any radioactive effluent expected to result from the process. The description of the process should be sufficiently detailed to permit evaluation of the radioactive hazards involved. The magnitude of the proposed operation should be indicated in terms of the amount and radioactivity of source, special nuclear, or by-product material to be handled per unit of time, and thermal power to be generated if any.

(b) A description of the facility. The description should be based on the design criteria for the facility as a whole and for those major component parts which are essential to the safe operation of the facility, and should be presented in sufficient detail to allow an evaluation of the adequacy of the various means proposed to minimize the probability of danger from radioactivity to persons both on and off site. The description should also cover any activities, other than those subject to license, proposed to be carried on in the building which will house the facility and on the balance of the site.

(c) A description of the site on which the facility is to be located. This should include a map of the area showing the location of the site and indicating the use to which the surrounding land is put, i. e., industrial, commercial, agricultural, residential; location of sources of potable or industrial water supply, watershed areas and public utilities; and a scale plot plan of the site showing the proposed location of the facility.

(d) A description of proposed procedures for: routine and non-routine operations, start-up and shut-down, maintenance, storage, training of employees, minimizing operational mishaps (such as locked controls, checklists, and close supervision), investigating unusual or unexpected incidents; and a description of such other details as may be useful in evaluating the existence and effectiveness of safeguards against the radioactive hazards in the operation of the facility.

(e) A description of plans or proposals in the event that acts or accidents occur which would create radioactive hazards. The descrip-

tion should relate the various operational procedures, the protective devices, and the pertinent features of the site, to such happenings as operational mistakes, equipment or instrument failure or malfunction, fire, electric power failure, flood, earthquake, storm, strike, and riot.

(f) Meterological, hydrological, geological, and seismological data necessary for evaluating the measures proposed for protecting the public against possible radioactive hazards.

(g) An evaluation of the proposed measures and devices to prevent acts or accidents which would create radioactive hazards or to protect against the consequences should such acts or accidents occur.

(h) A description of procedures for disposal of radioactive solid waste and the final disposal of liquid waste effluent.

(i) A description of means provided to sample atmosphere discharges through stacks where such stacks may emit byproduct material or special nuclear material.

§ 50.35 *Extended time for providing technical information.* Where, because of the nature of a proposed project, an applicant is not in a position to supply initially all of the technical information otherwise required to complete the application, he shall indicate the reason, the items or kinds of information omitted, and the approximate times when such data will be produced. If the Commission is satisfied that it has information sufficient to provide reasonable assurance that a facility of the general type proposed can be constructed and operated at the proposed location without undue risk to the health and safety of the public and that the omitted information will be supplied, it may process the application and issue a construction permit on a provisional basis without the omitted information subject to its later production and an evaluation by the Commission that the final design provides reasonable assurance that the health and safety of the public will not be endangered.

* * * * * * *

§ 50.39 *Public inspection of applications.* Applications and documents submitted to the Commission in connection with applications may be made available for public inspection in accordance with the provisions of the regulations contained in Part 2 of this chapter.

STANDARDS FOR LICENSES AND CONSTRUCTION PERMITS

§ 50.40 *Common standards.* In determining that a license will be issued to an applicant, the Commission will be guided by the following considerations:

(a) The processes to be performed, the operating procedures, the facility and equipment, the use of the facility, and other technical specifications, or the proposals in regard to any of the foregoing collectively provide reasonable assurance that the applicant will comply with the regulations in this chapter, including the regulations in Part 20, and that the health and safety of the public will not be endangered.

(b) The applicant is technically and financially qualified to engage in the proposed activities in accordance with the regulations in this chapter.

(c) The issuance of a license to the applicant will not, in the opinion of the Commission, be inimical to the common defense and security or to the health and safety of the public.

* * * * * * *

ISSUANCE, LIMITATIONS, AND CONDITIONS OF LICENSES AND CONSTRUCTION PERMITS

§ 50.50 *Issuance of licenses and construction permits.* Upon determination that an application for a license meets the standards and requirements of the act and regulations, and that notification, if any, to other agencies or bodies have been duly made, the Commission will issue a license, or if appropriate a construction permit, in such form and containing such conditions and limitations including technical specifications, as it deems appropriate and necessary.

§ 50.51 *Duration of license, renewal.* Each license will be issued for a fixed period of time to be specified in the license but in no case to exceed 40 years from the date of issuance. Where the operation of a facility is involved, the Commission will issue the license for the term requested by the applicant or for the estimated useful life of the facility if the Commission determines that the estimated useful life is less than the term requested. Where construction of a facility is involved, the Commission may specify in the construction permit the period for which the license will be issued if approved pursuant to § 50.56. Licenses may be renewed by the Commission upon the expiration of the period.

§ 50.52. *Combining licenses.* The Commission may combine in a single license the activities of an applicant which would otherwise be licensed severally.

§ 50.53 *Jurisdictional limitations.*—No license under this part shall be deemed to have been issued for activities which are not under or within the jurisdiction of the United States except insofar as the export of production or utilization facilities is authorized.

§ 50.54 *Conditions of licenses.*—Whether stated therein or not, the following shall be deemed conditions in every license issued:

(a) Title to all special nuclear material utilized or produced by facilities pursuant to the license shall at all times be in the United States.

(b) No right to the special nuclear material shall be conferred by the license except as may be defined by the license.

(c) Neither the license, nor any right thereunder, nor any right to utilize or produce special nuclear material shall be transferred, assigned, or disposed of in any manner, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, unless the Commission shall, after securing full information, find that the transfer is in accordance with the provisions of the act and give its consent in writing.

(d) The license shall be subject to suspension and to the rights of recapture of the material or control of the facility reserved to the Commission under section 108 of the act in a state of war or national emergency declared by Congress.

(e) The license shall be subject to revocation, suspension, modification, or amendment for cause as provided in the act and regulations, in accordance with the procedures provided by the act and regulations.

(f) The licensee will at any time before expiration of the license, upon request of the Commission submit written statements, signed under oath or affirmation, to enable the Commission to determine whether or not the license should be modified, suspended or revoked.

(g) The issuance or existence of the license shall not be deemed to waive, or relieve the licensee from compliance with, the antitrust laws, as specified in subsection 105a of the act. In the event that the licensee should be found by a court of competent jurisdiction to have violated any provision of such antitrust laws in the conduct of the licensed activity, the Commission may suspend or revoke the license or take such other action with respect to it as shall be deemed necessary.

(h) The license shall be subject to the provisions of the act now or hereafter in effect and to all rules, regulations, and orders of the Commission. The terms and conditions of the license shall be subject to amendment, revision, or modification, by reason of amendments of the act or by reason of rules, regulations, and orders issued in accordance with the terms of the act.

(i) The licensee shall not permit the manipulation of the controls of any production or utilization facility by anyone who is not a licensed operator as provided in Part 55 of this chapter.

(j) The licensee shall not, except as authorized pursuant to a construction permit, make any alteration in the facility constituting a change from the technical specifications previously incorporated in a license or construction permit pursuant to § 50.36.

§ 50.55 *Conditions of construction permits.* Each construction permit shall be subject to the following terms and conditions:

(a) The permit shall state the earliest and latest dates for completion of the construction or modification. If the construction or modification is completed before the earliest date specified, the holder of the permit shall promptly notify the Commission for the purpose of accelerating final inspection and any scheduled delivery of materials from the Commission.

(b) If the proposed construction or modification of the facility is not completed by the latest completion date, the permit shall expire and all rights thereunder shall be forfeited: *Provided, however,* That upon good cause shown the Commission will extend the completion date for a reasonable period of time. The Commission will recognize, among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as a basis for extending the completion date.

(c) Except as modified by this section, the construction permit shall be subject to the same conditions to which a license is subject.

(d) At or about the time of completion of the construction or modification of the facility, the applicant will file any additional information needed to bring the original application for license up to date.

§ 50.56 *Conversion of construction permit to license; or amendment of license.* Upon completion of the construction or alteration of a facility, in compliance with the terms and conditions of the construction permit and subject to any necessary testing of the facility for health or safety purposes, the Commission will, in the absence of good cause shown to the contrary issue a license of the class for which the construction permit was issued or an appropriate amendment of the license, as the case may be.

* * * * * * *

INSPECTION, RECORDS, REPORTS

§ 50.70 *Inspections.* Each licensee and each holder of a construction permit shall permit inspection, by duly authorized representatives of the Commission, of his records, premises, activities, and of licensed materials in possession or use, related to the license or construction permit as may be necessary to effectuate the purposes of the act, including section 105 of the act.

§ 50.71 *Maintenance of records, making of reports.* Each licensee and each holder of a construction permit shall maintain such records and make such reports, in connection with the licensed activity, as may be required by the conditions of the license or permit or by the rules, regulations, and orders of the Commission in effectuating the purposes of the act, including section 105 of the act.

* * * * * * *

AMENDMENT OF LICENSE OR CONSTRUCTION PERMIT AT REQUEST OF HOLDER

§ 50.90 *Application for amendment of license or construction permit.* Whenever a holder of a license or construction permit desires to amend the license or permit, application for an amendment shall be filed with the Commission, fully describing the changes desired, and following as far as applicable the form prescribed for original applications.

§ 50.91 *Issuance of amendment.* In determining whether an amendment to a license or construction permit will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses or construction permit, to the extent applicable and appropriate. If the application involves the material alteration of a licensed facility, a construction permit will be issued prior to the issuance of the amendment to the license.

REVOCATION, SUSPENSION, MODIFICATION, AMENDMENT OF LICENSES AND CONSTRUCTION PERMITS, EMERGENCY OPERATIONS BY THE COMMISSION

§ 50.100 *Revocation, suspension, modification of licenses and construction permits for cause.* A license or construction permit may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application for license or in the supplemental or other statement of fact required of the applicant; or because of conditions revealed by the application for license or statement of fact or any report, record, inspection, or other means, which would warrant the Commission to refuse to grant a license on an original application (other than those relating to §§ 50.51, 50.42 (a), and 50.43 (b)); or for failure to construct or operate a facility in accordance with the terms of the construction permit or license, provided that failure to make timely completion of the proposed construction or alteration of a facility under a construction permit shall be governed by the provisions of § 50.55 (b); or for violation of, or failure to observe, any of the terms and provisions of the act, regulations, license, permit, or order of the Commission.

§ 50.101 *Retaking possession of special nuclear material.* Upon revocation of a license, the Commission may immediately retake possession of all special nuclear material held by the licensee.

§ 50.102 *Commission operation after revocation.* Whenever the Commission finds that the public convenience and necessity, or the production program of the Commission, requires continued operation of a production or utilization facility, the license for which has been revoked, the Commission may, after consultation with the appropriate federal or state regulatory agency having jurisdiction, order that possession be taken of such facility and that it be operated for a period of time, as in the judgment of the Commission, the public convenience and necessity or the production program of the Commission may require, or until a license for operation of the facility shall become effective. Just compensation shall be paid for the use of the facility.

§ 50.103 *Suspension and operation in war or national emergency.* (a) Whenever Congress declares that a state of war or national emergency exists, the Commission, if it finds it necessary to the common defense and security, may,

(1) Suspend any license it has issued.

(2) Order the recapture of special nuclear material distributed.

(3) Order the operation of any licensed facility.

(4) Order entry into any plant or facility in order to recapture special nuclear material or to operate the facility.

(b) Just compensation shall be paid for any damages caused by recapture of special nuclear material or by operation of any facility, pursuant to this section.

ENFORCEMENT

§ 50.110 *Violations.* An injunction or other court order may be obtained prohibiting any violation of any provision of the act or any regulation or order issued thereunder. Any person who wilfully violates any provision of the act or any regulation or order issued thereunder may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment or both, as provided by law.

NOTE: The reporting and recordkeeping requirements contained herein have been approved by the Bureau of the Budget in accordance with The Federal Reports Act of 1942.

Dated at Washington, D. C., this 12th day of January 1956.

K. E. FIELDS, *General Manager.*

APPENDIX 4

LETTER DATED OCTOBER 9, 1956 FROM AEC TO EXECUTIVE DIRECTOR, JOINT COMMITTEE ON ATOMIC ENERGY, FORWARDING REPORTS

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C., October 9, 1956.

Mr. JAMES T. RAMEY,
Executive Director, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR MR. RAMEY: Enclosed is a statement setting out the procedures used by the Atomic Energy Commission in reviewing and acting on applications for class 104 licenses relating to power reactors.

This statement is being furnished the committee in line with our recent discussions with Mr. David Toll, of the committee staff.

Sincerely yours,

H. L. PRICE,
Director, Division of Civilian Application.

Enclosure: Procedures and Considerations Governing the Review of and Actions Taken on Applications for Class 104 Licenses Relating to Power Reactors.

A. PROCEDURES AND CONSIDERATIONS GOVERNING THE REVIEW OF AND ACTIONS TAKEN ON APPLICATIONS FOR CLASS 104 LICENSES RELATING TO POWER REACTORS

ISSUANCE OF CONSTRUCTION PERMIT

Docketing

Upon receipt in the Division of Civilian Application the application is routed to the Requirements, Reports, and Records Section of the Licensing Branch.

In that section the application is entered on the facility application docket record. This entry reflects the applicant's name and address, the date of the application, and the date received by the Commission. A docket number is assigned.

A notice of the receipt of the application, for publication in the Federal Register, is prepared and sent to the Division Director for signature.

Letters to appropriate State officials, notifying them of the receipt of the application, are prepared and sent to the Division Director for signature.

The application is routed to the Facilities Section, Licensing Branch.

Administrative review

The Facilities Section of the Licensing Branch reviews the application to determine if it has been submitted in accordance with and contains the information required by the AEC regulations. The following specific points are checked to determine whether the application:

1. Has been signed by an authorized officer under oath or affirmation.
2. Has been submitted in sextuplicate.
3. Furnishes information regarding the name, address, citizenship, business, or occupation of the applicant.
4. Identifies the class of license applied for.
5. Identifies the use to which the facility will be put.
6. States the period of time for which the license is sought.
7. Lists other licenses issued or applied for in connection with the proposed facility.
8. Includes data regarding the financial qualifications of the applicant to engage in the proposed activities in accordance with the regulations and to assume responsibility for the payment of Commission charges for special nuclear material.
9. Includes data regarding the technical qualifications of the applicant to engage in the proposed activities.
10. States the earliest and latest dates for completion of the construction of the facility.

11. Contains restricted data or other defense information; and, if so, whether such data has been separated from the unclassified information.

12. Contains a request for withholding a part of the application from public inspection, and if so whether such information has been separated from that part of the application to be disclosed.

13. Contains an agreement limiting access to restricted data.

14. Incorporates a request for the allocation by the Commission of special nuclear material for use in the operation of the facility. If such a request is made a determination is made whether adequate information has been furnished from which can be calculated the quantity of material to be allocated and schedules prepared reflecting shipments by the Commission to the applicant and returns of material by the applicant to the Commission.

15. Transmit the applicant's hazards summary report, or incorporates by reference a previously submitted report.

Upon completion of this administrative review the following actions are taken:

1. The General Manager is notified by memorandum of the receipt of the application.

2. The Joint Committee on Atomic Energy is notified by letter of the receipt of the application.

3. A copy of the application is furnished the Division of Inspection.

4. A letter acknowledging receipt of the application is dispatched to the applicant.

5. The technical staff of the Division of Civilian Application undertakes a review of the hazards summary report to evaluate health and safety problems.

The technical staff also identifies the data needed, if any, to complete the hazards summary report.

(Attached as an appendix is a statement outlining the procedures and considerations involved in the development of an applicant's hazards summary report, and in the review and analysis of the report by the technical staff of the Division of Civilian Application.)

Discussions between the technical staff and representatives of the applicant are attended by a member of the Division of Inspection, when possible, in order that the Division of Inspection may keep abreast of the design and other technical aspects of the applicant's program as they develop.

6. The financial qualifications data submitted by the applicant are forwarded to the Division of Finance for review with a request that advice be furnished as a basis for determining whether the applicant possesses the financial qualifications—

(*a*) to construct and operate the facility in accordance with the AEC regulations, and

(*b*) to assume responsibility for the payment of Commission charges for special nuclear material.

7. Descriptive data concerning the proposed facility is transmitted to the Division of Reactor Development with the request that—

(*a*) advice be furnished as a basis for determining whether the proposed reactor will be a facility involved in the conduct of research and development activities leading to the demonstration of the practical value of that type of facility for industrial or commercial purposes;

(*b*) the reasonableness of the special nuclear material requirements be reviewed in relation to the type and power level of the proposed reactor; and

(*c*) advice be furnished regarding the technical competence of the applicant to engage in the proposed activity.

8. The data furnished by the applicant relating to special nuclear material requirements are transmitted to the Division of Nuclear Materials Management for—

(*a*) calculation of the net amount of material to be allocated (the net allocation covers burn up, losses, and inventory during the term of the license);

(*b*) a determination that the quantity proposed to be allocated is available from the quantity of special nuclear material determined by the President to be available for distribution to licensees pursuant to section 53 of the act.

9. During the period while privately owned reprocessing facilities are nonexistent or inadequate, the Divisions of Production and Reactor Development (under whose supervision the AEC reprocessing plants are operated) are informed of the type, quantity, and schedule of expected returns of fabrication scrap and spent fuel and are requested to furnish advice as to whether existing or proposed AEC reprocessing facilities can handle these returns.

10. In the absence of a request from the applicant that the application or a part thereof be withheld from public inspection, a copy of the application, including the hazards summary report, is dispatched to the AEC public document room. (If the applicant requests a withholding from public inspection the reasons for the request are evaluated and a decision made as to whether the reasons given are adequate to warrant a determination that disclosure is not required in the public interest and would adversely affect the interest of a person concerned.)

11. If the review of the application discloses that the information submitted is inadequate, the applicant is informed by the Division of Civilian Application of the nature of the information required to complete the application.

12. Upon completion of the review of the application the Division of Civilian Application prepares its recommendations with respect to the issuance or denial of a construction permit.

A statement of the entire case is prepared by the Division of Civilian Application in the form of a Commission staff paper. This paper includes all pertinent information concerning the application submitted; the special nuclear material requirements; the views of other AEC divisions with respect to their particular areas of interest; and a summary of all facts bearing on the statutory and regulatory determinations which must be made in connection with the issuance of a construction permit. The paper includes proposed recommendations by the General Manager with respect to the making by the Commission of determinations concerning (*a*) the type and purpose of the proposed facility, (*b*) the technical and financial qualifications of the applicant, (*c*) the reasonableness of special nuclear material requirements and schedules, and (*d*) the adequacy of precautions taken by the applicant to assure that the health and safety of the public will not be endangered. The paper also includes proposed recommendations by the General Manger regarding the issuance of a construction permit and

the allocation of special nuclear material for use as fuel in the operation of the reactor.

In the event favorable action is recommended the staff paper includes a draft of a proposed construction permit (incorporating an allocation of special nuclear material), together with a draft transmittal letter to the applicant dealing with questions raised in the application not covered by the construction permit or not responded to in previous communications. (Comments of the applicant on terms and conditions of the permit are solicited prior to this submission to the Commission.)

Also included are a draft public announcement (prepared by the Division of Information Services) and draft letters to the Chairmen of the JCAE, MLC, and GAC.

The draft staff paper is submitted to the General Counsel for concurrence and/or comments regarding the recommendations contained in the paper.

The draft staff paper is then submitted to the General Manager for consideration. If the paper is approved by the General Manager it is sent by him to the Commission for consideration and action.

13. If the Commission approves the issuance of a construction permit such a permit (incorporating the modifications, if any, which may have been made by the Commission during their consideration of the case) is issued by the Director, Division of Civilian Application and dispatched to the applicant.

If the action taken by the Commission is to deny the requested license, the applicant is notified of the denial and the reasons therefor.

Concurrently, the following actions are taken:

(*a*) The Chairmen, JCAE, MLC, and GAC are notified of the action taken on the application;

(*b*) A public announcement is issued;

(*c*) A notice of the action taken is transmitted to the Federal Register for publication;

(*d*) A copy of the notification to the applicant is filed in the AEC Public document room;

(*e*) Appropriate State and Federal agencies are informed of the action taken;

(*f*) The AEC Division of Inspection is notified of the action taken.

B. CONVERSION OF THE CONSTRUCTION PERMIT TO A LICENSE AUTHORIZING OPERATION OF THE FACILITY

Prior to the completion of construction, the applicant submits such information as may be required to bring the license application up to date. The data submitted includes a final hazards summary report which is sent to the technical staff of the Division of Civilian Application for review and analysis. The technical staff is requested to submit its conclusions as to whether the final design of the reactor provides reasonable assurance that the health and safety of the public will not be endangered by operation of the reactor in accordance with the specified procedures.

A facility license authorizing operation of the reactor is drafted in the event (1) the technical staff makes a favorable conclusion in these respects (in appropriate cases with the advice and assistance of the Advisory Committee on Reactor Safeguards), (2) advice is received

from the Division of Inspection that the facility has been constructed in conformity with the application and with the rules and regulations of the Commission, and (3) in the absence of any good cause being shown to the Commission why the granting of a license would not be in accordance with the purposes of the act. Normally the facility license will incorporate appropriate authorizations to possess the source, special nuclear and byproduct material used in or produced during the operation of the reactor.

A staff paper is prepared by the Division of Civilian Application and sent to the General Manager for approval. If the paper is approved by the General Manager the paper is submitted by him to the Commission for consideration and action. If the paper recommends favorable action it will include a draft operating license. The staff paper reflects the concurrence and/or comments of the Office of General Counsel.

If the Commission approves the issuance of an operating license, such a license (incorporated the modifications, if any, which may have been made by the Commission during their consideration of the case) is issued by the Director, Division of Civilian Application and dispatched to the applicant.

If the action taken by the Commission is to deny the requested license, the applicant is notified of the denial and the reasons therefor.

Concurrently, the following actions are taken:

(*a*) The Chairmen, JCAE, MLC, and GAC are notified of the action taken;

(*b*) A public announcement is issued;

(*c*) A notice of the action taken is transmitted to the Federal Register for publication;

(*d*) A copy of the notification to the applicant is filed in the AEC public document room;

(*e*) Appropriate State and Federal agencies are informed of the action taken;

(*f*) The AEC Division of Inspection is notified of the action taken.

C. APPENDIX DIVISION OF CIVILIAN APPLICATION RESPONSIBILITIES AND OBJECTIVES WITH RESPECT TO REACTOR HAZARDS

A major objective of the Commission's regulatory program is the protection of the health, safety, and property of the public, both those who are operating the facility and those who live in the environs, against the potential hazard resulting from the escape of radioactive materials from a nuclear energy facility.

With the passage of time, and with the consequent expansion of our knowledge of the possibilities and probabilities of nuclear accidents, it will be possible for us to develop and publish standards, guides, codes, and regulations which will make it possible for the designer of a nuclear reactor to know in advance that if he incorporates certain design features in his reactor, if he has certain relationships between his location and the containment features of his reactor, and if he follows certain operating procedures, he will be able to meet the safety requirements of the Commission's regulatory program. Under such conditions, it might be expected that those who propose to build and operate reactors would select the reactor and its location, prepare

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the necessary hazard evaluation and then submit an application for the necessary licenses. The Commission could then make its findings on the safety and other aspects of the proposed reactor, issue a construction permit with no reservation on safety other than that the unit be built as specified in the construction permit. When construction has been completed in accordance with such conditions, as indicated by inspection of the reactor as constructed, the Commission could convert the permit to a license in which the previously recognized operating procedures and standards would be incorporated as conditions.

However, since the reactor science and technology have not developed to the point where the interrelationships of the many complex factors which have a potential effect on the safety aspects of reactors is completely understood, and since the economic considerations have not yet led to the selection of one or more types of reactors for semimass production, it has not been practical, or even desirable, for the Commission to attempt to freeze its regulatory program by the issuance of many definitive guides, standards or rules. On the contrary, the Commission has taken the approach that its regulations with regard to hazard determination should be general in nature rather than specific, and that each reactor should be treated as a unique case.

The Commission has developed a system under which those interested in constructing reactors may at a time well ahead of submission of a formal license application discuss the problems associated with reactor safety with the Commission staff members responsible for the technical evaluation of the potential hazards.

At the time of these initial meetings, the Commission representatives outline the broad objectives of a reactor hazard evaluation. It is pointed out that before any reactor, regardless of its size or intended use, is licensed for operation, the Commission must, on the basis of detailed study and evaluation of the design specifications and operating procedures and conditions, determine that there is reasonable assurance that such operation will not endanger the health and safety of the public. It is clearly indicated to them that responsibility for safety of the reactor rests with them, and that a license by the Commission in no way relieves them of this responsibility. They are told that the technical staff of the Commission cannot make the basic hazard study and evaluation of reactor designs but that because of the complexity of the problem, the initial detailed hazard study and evaluation can only be made by the scientists and engineers who are thoroughly familiar with the specific reactor design under consideration, and they must exercise the same precise concern on this that they do on the design itself.

They are told that a hazard evaluation requires a complete study of all aspects of the reactor and its operation to determine, on the basis of the best available information, what can possibly go wrong and what steps can be taken to prevent such an occurrence. It is explained that their engineers and scientists must critically review every phase of the reactor design and operating procedure in itself and in its relationship to the integrated whole. They must carefully consider the inherent nuclear, chemical, metallurgical, physical, and mechanical characteristics of the fuel, the moderator, the coolant, the neutron absorbers, and structural materials, in relation to the similar characteristics of

the control and safety systems, the heat removal system, the pressure systems, and so forth, to assure that the probability of a serious operating mishap has been brought to an acceptably low level.

They are told that while this review and evaluation of the design and proposed operating procedures is concerned with determining that reasonable steps have been taken to prevent escape of radioactive fission products from the reactor core, it must be recognized that, in spite of all precautions, the most unlikely series of events might take place, and that the designers must therefore consider that events could occur which could result in the release of radioactive materials from the reactor core. It is pointed out to them that they must then determine what second line of defense they should contrive to prevent serious consequences should such highly unlikely accidents occur. In this regard, the discussion brings out the relationship of location to containment and the fact that the licensee must select his site on the basis of complete knowledge of pertinent radiological safety factors; that he must consider the hydrology, meteorology, and seismology of his alternative sites; that he must look at the population density of the surrounding areas and attempt to foresee the probable population distribution in future years; that he must determine whether the surrounding areas are used or will be used for industrial, commercial, agricultural, or residential purposes, or are not likely to attract human habitation; and that he must know whether the surface of ground waters that might be subject to contamination by his reactor are used for human or animal consumption.

Following these initial discussions the potential licensee will submit to the Commission as a part of his formal license application a preliminary hazard report which, taking into account the status of his design progress, presents the applicant's findings with regard to (1) his best technical opinion as to what events could possibly take place in his reactor which could result in the release of radioactive materials from its core; (2) his judgment concerning the adequacy of the countermeasures which he has taken, either by design or operating procedure, to minimize the probability of these events occurring; and (3) his conclusions concerning the effectiveness of his containment and isolation in minimizing the effects of such events should they occur. As more experimental and design information becomes available to the applicant, he will submit additional supplemental preliminary hazard summary reports.

The Commission staff reviews these reports as they are submitted, holds informal meetings with the applicant, discusses the safety aspects of the reactor with its advisers (ACRS), considers the progress of the developmental programs which are being carried out by the applicant, by the Commission, or by others working in the same field, and finally arrives at a point when it believes that there is reasonable assurance that the unresolved safety problems can be resolved in a way that will make it possible for the applicant to operate the proposed reactor at the proposed site without undue risk to the health, safety, and property of the public. At this juncture, the Commission may issue a conditional construction permit.

Such a permit will not be converted to a license to operate until the complete hazard-summary report has been submitted and the Commission has made a finding based thereon that the final design of the specific facility provides reasonable assurance that the health and

safety of the public will not be endangered by operation of the reactor in accordance with the specified procedures. Such a permit is of value to the applicant in that it gives him assurance that any construction activity that he may desire to carry out will not be in violation of the Atomic Energy Act of 1954. While it gives him certain assurance concerning other aspects of his application, from the hazard standpoint, the issuance of a conditional construction permit merely means that, based on existing information, it is the opinion of the Commission that it will be possible for the designers of the reactor to resolve any existing design and operational uncertainties in such a way that when the final design and operating procedures of the reactor, including its containment, are evaluated, they will be found to offer no unacceptable hazards. Since the final design has not been determined and the final evaluation of actual design and operating procedures has not been made at the time the permit is issued, it is clear that, if, as the program progresses, as more calculations are made, as more information is gathered, and as more experiments are carried out, it should develop that a reactor of the type under consideration is shown to be unsuitable for operation on the chosen site, or for that matter on any site, the Commission, of course, could not convert the permit to a license to operate.

Following the issuance of a conditional construction permit, the Commission staff continues to work closely with the applicant in an attempt to resolve the unresolved-hazard questions as more information becomes available. Finally, on the basis of the final design and proposed operating conditions, the applicant submits a final hazard-summary report—which will usually consist of a compilation of all preliminary reports—upon which the Commission makes its finding that the reactor can operate without undue risk to the health and safety of the public. When the reactor is constructed in accordance with the plans and specifications which were indicated in the final hazard-summary report, the construction permit is converted to a license to operate with such operational conditions as are deemed necessary by the Commission for the safety of the public.

In the discharge of its hazard-evaluation responsibilities, the Commission staff seeks the advice and recommendations of the Commission's Advisory Committee on Reactor Safeguards.

Appendix 5

Letter Dated January 4, 1957, From Chairman of AEC to Chairman, Joint Committee, Commenting on August 9, 1956, Letter; Describing Functions of ACRS and AEC Staff; and Forwarding Statements of Functions and Responsibilities of Three Divisions

United States Atomic Energy Commission,
Washington, D. C., January 4, 1957.

Hon. Clinton P. Anderson,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States

Dear Senator Anderson: This is in response to the letter of November 27, 1956, from Mr. Brobeck to Mr. Price requesting that

the Commission furnish the Joint Committee with certain additional material in connection with the committee's study of selected aspects of civilian application activities.

The following is the information requested:

(*a*) *Comments on the matters mentioned in paragraph 3 of your letter of August 9, 1956*

(*1*) *Suggestion that the act be amended to separate the quasi-judicial from the developmental and promotional functions of the Commission.*—We have examined the desirability of separating the regulatory from the promotional and direct operational functions of the Commission and in connection therewith have considered the possibility of establishing a separate agency with complete responsibility for the regulation of the atomic energy industry We have concluded that an amendment to the act establishing a separate agency is not desirable, certainly at the present time.

In reaching this conclusion, we have attached great significance to the need during the period ahead for singleness of administration of the Government's activities in atomic energy, be they regulatory, promotional, or direct operational in nature. Establishment of a separate regulatory agency would divide between two agencies the responsibility for development of a national atomic energy program. We believe such a division would seriously hinder and delay this development and result in waste and duplication of effort, particularly in view of the present state of the art.

A basic responsibility of the Government under the Atomic Energy Act of 1954 is the promotion of the growth and development of the peaceful uses of atomic energy. This is accomplished in part through the establishing and administering of a sound regulatory framework for (1) the possession and use of special nuclear, source, and byproduct materials and the facilities used in connection therewith, (2) for the enforcing of security requirements which arise from defense considerations, and (3) for the safeguarding of the public health and safety. Regulation of the atomic energy industry, if it is to be in the national interest, must contribute to the industry's development; likewise, the growth of the industry must be promoted and stimulated, subject at all times to the paramount objective of making the maximum contribution to the common defense and security. These regulatory, promotional and direct operational responsibilities of the Government are thoroughly interrelated. We believe the need for their proper balancing and effective execution argues convincingly for the continued combining of the principal atomic energy activities of the Government in one agency.

Although we believe that establishing a separate agency would be undesirable, consideration is being given to the possibility of rearranging the Commission's organizational structure in view of the increasing activities in the regulatory area. You will be kept advised of developments in this regard.

(2) *Suggestion the act should require a public hearing before the grant or denial of a construction permit or license.*—We recognize that it is important to inform the public of the salient facts and the major factors considered by the Commission in issuance of a construction permit or facility license in view of the inability of the Commission to provide detailed criteria for the construction and operation of reactors at this stage of development. However, the requirement of a

hearing in uncontested cases is undesirable because it may involve unnecessary delay in administrative action on an application for a license or permit. Particularly during this period of rapid development in the AEC regulatory program, it would be undesirable to take legislative action which would restrict flexibility in the establishing of administrative procedures beyond those limitations already established by the Administrative Procedures Act.

In order to insure that the public is adequately informed, the Commission has modified its practices with regard to processing applications for the issuance of construction permits and facility licenses or substantial modifications thereof. The Commission will in such cases either order a hearing to be held or issue a notice of intent to issue or deny the license or permit or modification thereof. In the latter case, the notice will be accompanied by a memorandum of the Division of Civilian Application. The memorandum will set forth the salient facts and major factors considered in each case. The Commission feels that this memorandum will serve both to apprise the public of pertinent information and considerations relating to the particular action sought without delaying such action unnecessarily or binding the Commission to a mandatory hearing procedure. An amendment to the Commission's Rules of Practice (10 C. F. R., pt. 2) formalizing the new procedure will soon be published in the Federal Register. (Italics added.)

Interested persons will be given an opportunity to request a hearing within a stated period of time after the notice is published and prior to final action by the Commission. Such persons will have available to them as a basis for deciding whether to request a hearing both the memorandum and the application, including any correspondence relating thereto.

(3) *Suggestion that the act be amended to require that all reports on reactor safety be made public as soon as completed.*—To the extent that this suggestion would include internal working papers prepared by the Commission's staff, including consultants, the Commission would be opposed to such a move. The reason for our opposition is stated in my letter being sent to you under separate cover in which I have pointed out the reason for not making available such documents for public disclosure.

However, in cases involving the issuance or denial of a construction permit or facility license or a substantial modification thereof, the Commission will publish the memorandum referred to in the previous section of this letter. This memorandum will be a report of the Division of Civilian Application on the pertinent facts and major considerations in connection with the staff evaluation of the safety features of the particular reactor concerned and will thus serve to fully inform the public of the hazard aspects of the unit.

In addition to this, the applicant submits technical information on the safety of the reactor, together with his evaluation of the hazard as a part of the license application. This information is, of course, made publicly available upon receipt in accordance with the public records regulation recently promulgated as part 9 of title 10 of the Code of Federal Regulations. This regulation also provides for the public availability of reactor safety reports filed in connection with any proceeding before the Atomic Energy Commission.

We believe the Commission is meeting your objective through these means and no amendment to the act is necessary.

The Bureau of the Budget has advised us that it has no objection to the submission of the comments in this and the two previous sections.

(*b*) *Summary statement of the respective functions of the ACRS and the reactor hazards evaluation staff of the Division of Civilian Application.*—When the Commission was established, in accordance with the Atomic Energy Act of 1946, and assumed responsibilities for the operation of the atomic energy facilities which had been built by the Manhattan Engineer District, it recognized its responsibility to the public to assure that the reactors built and operated for it by its contractors would not be unreasonable hazards to the public. The Commission contractors together with the Commission staff, of course, had the responsibility for assuring that the greatest practical degree of safety was incorporated in design and operating procedures. However, in order to have an independent evaluation of the hazard aspects of its reactors, the Commission established a Reactor Safeguard Committee, made up of recognized technical experts in the field. This Committee was asked to advise the Commission on the safety aspects of operation of its production and development reactors and of the safety problems which would result from new reactors or modification of existing reactors.

In 1950, there was considerable agitation from the owners of property on the Wahluke Slope across the river from the Hanford reactors for the Commission to review its policy of holding land from irrigation—through agreement with the Department of Interior. To study this problem, and other problems having to do with locations of reactors, the Commission established an Advisory Committee on Reactor Location Problems consisting of consultants with scientific and engineering backgrounds.

It soon became evident that the problems of reactor location and reactor safeguards could not be considered separately and, as a result, the two Committees were consolidated into one, known as the Advisory Committee on Reactor Safeguards, in July 1953. This group was to advise the Commission on all hazard aspects of all of its reactors.

During the period when the only activity in the field of reactor development and construction was done by the Commission itself, each case was, through management control, carefully evaluated by the Commission staff, and the number of cases was small enough so that the ACRS, a group of consultants, could be expected to furnish advice on each one.

With the passage of the 1954 act, and the consequent opening up of the program to private industrial effort, it became possible for private companies to build and operate reactor facilities under license. The act which made this possible, however, assigned to the Commission the responsibility, through licensing procedures, to protect the health and safety of the public. In order to carry out this function, it became necessary for the Commission to establish a technical staff for the evaluation of the hazards of licensed reactors.

Aside from the need for the Commission to have a technical staff of its own to evaluate licensed reactors, an additional factor which has become important during the past 2 years is that the number of new reactors which the Commission itself is building, as a result of its power and military propulsion development program, has increased to the point where part-time consultants with other employment

cannot be expected to devote the necessary time to furnish advise on each of them.

In recognition of these factors the Commission established, in early 1955, the nucleus of a full time staff for hazard evaluation. This group initially a part of the General Manager's staff, was assigned to the Division of Civilian Application when that group was formed, since the hazard evaluation is a major phase of the licensing responsibility.

At this time, the organizational responsibility for the hazard evaluation of all reactors, whether Commission owned or licensed, and of all other licensed facilities, such as plants for the processing of spent fuel elements, rests in the Division of Civilian Application.

The DCA reviews in detail the hazard aspects of every reactor which is to be constructed, operated, or modified. In those cases where the hazard considerations are fairly well established or where the modifications to existing reactors are such as to introduce little, if any, potential additional hazards, the advice of the ACRS is not being sought. In such cases, the DCA evaluates the safety features of such facilities and keeps the ACRS informed of their status.

In the case of large reactors (both power and testing), and of reactors having unusual features, or of any other problem where the Commission feels the need for additional advice in hazard evaluation, the Advisory Committee is asked to review the project and furnish advice and comments.

The Division of Civilian Application must consider this advice in connection with the total evaluation of the hazards of the facility.

(*c*) *The functions and responsibilities of certain divisions.*—Statements describing the functions and responsibilities of the Divisions of Civilian Application, Inspection, and Reactor Development are attached.

Sincerely yours,

LEWIS L. STRAUSS, *Chairman.*

FUNCTIONS AND DELEGATIONS, DIVISION OF INSPECTION

Division of Inspection

1. *Functions.*—The Division of Inspection will:

(*a*) Directly investigate all questions of employee conduct, fraud, etc., in AEC and contractor organization.

(*b*) Ascertain that adequate inspection and management appraisals of AEC and contractor activities are developed and carried out by the headquarters staff and program divisions and operations offices; make spot-check inspections or inquiries.

(*c*) Ascertain that these inspections, management appraisals, and the internal audit are adequate in the areas they cover and do not involve any unnecessary duplication of activity.

(*d*) Directly inspect and investigate licensees for compliance with all license requirements and develop inspection policies, procedures, and schedules for inspection of licensees by managers of operations, or others, in accordance with approved delegation of authority.

(*e*) When directed by the General Manager, inquire into and report upon any other matters that are under the General Manager's authority.

(*f*) Ascertain whether decisions are made and implemented by responsible officials as a result of inspections surveys, and appraisals conducted by the staff of the Division of Inspection.

(*g*) Establish and maintain liaison with other Federal agencies and agencies of State governments and their political subdivisions on matters pertaining to inspection of licensees.

2. *Responsibility of the Director.*—The Director, Division of Inspection, is responsible to the General Manager for the performance of the assigned functions.

3. *Delegation of authority.*—The Director, Division of Inspection, is authorized and directed to take such action as is necessary to carry out the responsibilities assigned to him by this and other official issuances and communications, including recommendations to the General Manager for revocations or suspensions of licenses.

4. *Redelegation of authority.*—The Director, Division of Inspection, may redelegate, except where expressly prohibited, to members of his staff any authority delegated to him by this instruction or other official issuances and communications, making such stipulations as he may deem necessary.

5. *Relationships with other officials.*—In performing the functions assigned the Director, Division of Inspection, is responsible for seeing that instructions he may develop are properly coordinated with divisions and offices having a joint interest and that actions he may take are in accordance with established policies of the AEC.

6. *Access to information.*—The Director, Division of Inspection, and members of his staff shall have access to all reports, memoranda, and other information within the AEC, not to include weapons design and stockpile information unless approved by the General Manager.

7. *Reference to basic authority.*—Authority to perform the functions and carry out the responsibilities as described above are derived from section 25c, chapter III, Public Law 703, 83d Congress.

FUNCTIONS AND DELEGATIONS, DIVISION OF REACTOR DEVELOPMENT

Division of Reactor Development

1. *Functions.*—The Division of Reactor Development is assigned the following functions:

(*a*) Developing and improving nuclear reactors and associated equipment, processes, materials, and facilities.

(*b*) Operating nuclear reactors and supporting facilities for research and development purposes.

(*c*) Establishing coordinated programs to assure the development of:

(1) Various types of military reactors for ship and aircraft propulsion and for other military purposes to meet the requirements of the Department of Defense, and

(2) Economically feasible power reactors, both in AEC-owned and private facilities.

(*d*) Technically evaluating proposals received from industry for AEC assistance under the demonstration power program and similar programs and coordinating projects established pursuant to such program.

(*e*) Providing staff advice and assistance on technical aspects of international and domestic proposals for the use of reactors for power or research.

(*f*) Advising industrial and other contacts on technical and economic aspects of reactor systems including chemical reprocessing, waste disposal, and sanitary engineering. When such technical and economic aspects of industrial participation depends upon or involves utilization of facilities not under Division of Reactor Development's jurisdiction, advice relative thereto will be coordinated with the responsible operating division.

(*g*) Providing guidance and technical review on reactor problems of other headquarters divisions.

(*h*) Developing requirements for, production and procurement of, and authorizing the distribution of zirconium, beryllium, and hafnium for AEC contractors' use.

(*i*) Developing requirements for and authorizing distribution of source and special nuclear material to Division contractors.

(*j*) Providing staff direction for the operation of AEC-sponsored training programs and schools in reactor technology.

(*k*) Engineering, construction, management, and maintenance of AEC facilities associated with assigned functions.

(*l*) Providing, on request and under mutually agreed conditions, management and engineering support for execution of programs which are the primary responsibility of other divisions.

(*m*) Coordinating, reviewing, and defending (as assigned by the General Manager) budgets and the general supervision of expenditures made under approved budgets and programs.

2. *Responsibility of the Director.*—The Director, Division of Reactor Development, is responsible to the Assistant General Manager for Research and Industrial Development for the performance of functions assigned to the Division of Reactor Development. Specifically, the Director is responsible for:

(*a*) Recommending to the General Manager and the Commission long-range program objectives in the Reactor Development Area and developing and recommending comprehensive program plans designed to accomplish these objectives.

(*b*) Recommending to the General Manager program goals for the Division of Reactor Development within the overall plans and objectives established by the Commission and the General Manager.

(*c*) Recommending specific programs in order to meet goals and objectives approved by the General Manager.

(*d*) Planning, directing, and coordinating the work of the Division (and the operations offices reporting to the Division) in order to accomplish approved programs.

(*e*) Following approved programs closely and directing adjustments or recommending modifications in order to meet program schedules and goals.

(*f*) Reporting to the General Manager and the Commission on the status of these programs and their accomplishment.

FUNCTIONS AND DELEGATIONS, DIVISION OF CIVILIAN APPLICATION

Division of civilian application

1. *Functions.*—The Division of Civilian Application is assigned the following functions:

(*a*) Developing and recommending overall policy for carrying out AEC's responsibilities for encouraging private activities in

the civilian applications of atomic energy and coordinating with interested headquarters divisions and offices and operations offices detailed plans and programs for accomplishing this objective. Specifically, the Division is assigned responsibility for:

(1) Identifying industrial activities including those now performed by the AEC, which lend themselves to performance by private industry.

(2) Assisting industry in obtaining information and source, special nuclear, and byproduct materials and other materials and services as required by industry in their civilian application program.

(*b*) Developing and coordinating overall AEC policies, standards and procedures relating to:

(1) The use of AEC facilities by industrial and other private organizations for private purposes.

(2) The use of AEC and contractor employees in providing consultations to private industry on matters relating to the civilian use of atomic energy.

(3) The conduct of seminars and institutes directed at providing industry and other groups with technical information of use to them in their business or industry.

(*c*) Developing and providing for the issuance of regulations and other instructions affecting the licenses, access permits and authorizations.

(NOTE.—As used in this section "license" means a license issued pursuant to chapter 6 (special nuclear material) 7 (source material), 8 (byproduct material), or 10 (atomic energy licenses) of the AE Act of 1954, or a construction permit issued pursuant to sec. 185 of the act. As used in this section "authorization" means an authorization or approval for private activities under an agreement for cooperation.)

(*d*) Developing, through coordination with the divisions concerned and with the approval of the General Manager, policies, standards, procedures, specifications and prices for material sold or leased by AEC to private industry or any such material acquired by the AEC from private industry and for services furnished by the AEC to private industry. Specifically:

(1) Policies, standards, and specifications relating to the conditions of sale or lease imposed by the AEC at the time source, special nuclear and byproduct materials are sold or leased to industrial users and others; developing and recommending sale prices to be charged for materials sold or leased; policies, terms, and charges for the furnishing of services by AEC to private organizations.

(2) Policies, standards, and specifications relating to the conditions of acquisition by AEC of special nuclear material produced at production and utilization facilities operated by licenses; developing and recommending prices to be paid for such material.

(Note: In the establishment of policies, standards, procedures, specifications and prices referred to above, full utilization shall be made of the special competence of the concerned divisions. Also, the above responsibilities do not preclude other divisions from initiating policies, standards, procedures, specifications and prices or changes therein,

provided such work is done in close collaboration with the Division of Civilian Application.)

(3) Handling requests from industry for information regarding those policies, standards, specifications, prices and charges outlined in (1) and (2) above.

(*e*) Determining requirements for source, special nuclear, byproduct and other materials for use by licensees and prospective licensees and authorizing the distribution of source, special nuclear, and byproduct materials to licensees.

(*f*) Developing health and safety standards, guides, and codes for the design, operation, supervision, containment, and location of all reactors including both AEC and privately owned reactors.

(*g*) Evaluating all reactor proposals with regard to design, operation, supervision, containment, and location on the basis of established health and safety standards, guides, and codes. This will include reviewing all pertinent reactor hazard information.

(*h*) Providing staff advice and assistance on reactor hazards to the responsible operating divisions.

(*i*) Participating jointly with the Division of Inspection in developing a comprehensive plan for conducting investigations of the causes of major reactor accidents.

(*j*) Developing and recommending policies for cooperation with, and acting as liaison with, State and local governments and other Federal agencies relative to matters of mutual interest arising out of the AEC regulatory program.

(*k*) Handling requests for, and issuing, modifying, amending and denying licenses and authorizations.

(*l*) Handling requests for, granting or denying access permits or requests for access to specific categories of information under an access permit.

(*m*) Promoting public understanding of the program described above.

2. *Responsibility of the Director.*—The Director, Division of Civilian Application is responsible to the General Manager for the performance of the assigned functions.

3. *Delegation of authority.*—The Director, Division of Civilian Application is authorized and directed to take such action as is necessary to carry out the responsibilities assigned to him by this and other official issuances and communications. Specifically, the Director, Division of Civilian Application is authorized to:

(*a*) Issue, renew and amend licenses, access permits and authorizations.

(*b*) Issue, pursuant to section 2.102 of the regulations in title 10, CFR, part 2, Rules of Practice, notices of the denial of applications for licenses or of applications for the amendment or renewal of licenses;

(*c*) Issue notices of the denial of applications for access permits or authorizations or of applications for the amendment or renewal of access permits or authorizations;

(*d*) Issue notices of violation and orders pursuant to the provisions of subpart B of Rules of Practice.

4. *Redelegation of authority.*—The Director, Division of Civilian Application may redelegate, except where expressly prohibited, to members of his staff any authority delegated to him by this instruction

or other official issuances and communications, making such stipulations as he may deem necessary.

5. *Relationships with other officials.*—The Director, Division of Civilian Application, participates in the continuous review of the AEC program as a whole to assure the development of sound policies and standards, for effective operations. In performing the functions assigned to him, the Director, Division of Civilian Application, is responsible for seeing that instructions he may issue and actions he may recommend are properly coordinated with divisions and offices having joint interests and that actions he may take are in accordance with established policies of the AEC.

Appendix 6

Correspondence in Summer and Fall of 1956 Between Joint Committee and AEC Concerning Advisory Committee Report on PRDC Application

Congress of the United States,
Joint Committee on Atomic Energy,
July 9, 1956.

Mr. Lewis L. Strauss,
Chairman, Atomic Energy Commission,
Washington, D. C.

Dear Mr. Strauss: I am writing to again request that a copy of the recent report of the Advisory Committee on Reactor Safeguards concerning the Detroit Edison breeder reactor be made available to the committee.

As you know, the staff of the committee requested this report from Mr. R. W. Cook, Deputy General Manager, on June 28.

I consider it important that the report be made available to us now when several legislative proposals on reactor development and acceleration are before the Congress. It would be most unfortunate if the committee and the Congress were denied any pertinent information during their deliberations.

Sincerely yours,

Clinton P. Anderson, *Chairman.*

United States Atomic Energy Commission,
Washington 25, D. C., July 13, 1956.

Hon. Clinton P. Anderson,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

Dear Senator Anderson: This is in answer to your letter of July 9 requesting that a copy of the recent report of the Commission's Advisory Committee on Reactor Safeguards concerning the Detroit Edison breeder reactor be made available to members of the Joint Committee.

The report is a recommendation to the Commission by an advisory group. The recommendation is one of the elements which the Commission will have to take into consideration in passing upon the application of the Detroit Edison group for a facilities license and

construction permit under the licensing provisions of the act and the Commission's regulations. The Commission has not yet taken any action on the application of the Detroit group because the report of the Advisory Committee and other matters pertinent to the application are now under consideration by the staff of the Commission.

In passing upon the application of the Detroit group, the Commission is acting in a quasi-judicial capacity as required by sections 101 and 104 of the Atomic Energy Act of 1954. The Commission considers that it would be inappropriate to disclose the contents of advice and recommendations which are currently under review and which will be taken into account by the Commission in arriving at its decision and it believes that the Joint Committee in the ordinary course will support such a position. Under any other procedure the independence of the staff of the Commission or advisory committees to the Commission would be very seriously impaired in the future, the value of their contributions would be greatly diminished, and the regulatory functions of the Commission would be correspondingly impeded.

In a letter dated July 12, 1955, from the Attorney General to the Chairman of the Securities and Exchange Commission, the Attorney General said this, in part: "It is my opinion that the position you have taken on behalf of the Commission in paragraph 4 of your letter is sound. I agree that it would not be consistent with the orderly conduct of the administrative processes of your agency to subject to concurrent congressional review the manner in which the Commission is discharging its *quasi-judicial* functions on any pending application." [Italics supplied.]

The report which you request is a letter which was in part introduced into the record of the Subcommittee on Public Works of the House Committee on Appropriations at a hearing some days ago by Commissioner Murray. This was unilateral action on the part of Commissioner Murray, taken without prior consultation with the Commission.

In view of this circumstance, however, and with the understanding that the Commission does not regard this as constituting a precedent for the future, the letter is herewith delivered to the Joint Committee. We regret both the circumstances recited above and your insistence upon the delivery of this letter, and we respectfully request that the letter be treated as administratively confidential by your committee.

Sincerely yours,

LEWIS L. STRAUSS, *Chairman.*

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
July 13, 1956.

Mr. KENNETH E. FIELDS,
General Manager, Atomic Energy Commission,
Washington, D. C.

DEAR MR. FIELDS: This will acknowledge receipt at the offices of the Joint Committee on Atomic Energy of the Commission's letter of July 13, 1956, addressed to the chairman of the Joint Committee and signed by the Chairman of the Commission. The letter states that

it enclosed a copy of the Report of the Commission's Advisory Committee on Reactor Safeguards on the Detroit Edison Breeder Reactor, in response to the committee's letter of July 9, 1956. As you know, the committee formally ratified this request at its most recent meeting.

Senator Anderson stated that he could not receive the report under the conditions imposed by the last sentence of the letter which reads:

"We regret both the circumstances recited above and your insistence upon the delivery of this letter, and we respectfully request that the letter be treated as administratively confidential by your committee."

Senator Anderson directed that the report be returned to the Commission with the statement that he could not receive the report under these conditions.

In accordance with this direction, the report is returned to you herewith. This copy of the report has not been read by Senator Anderson, any other member of the Joint Committee, or its staff.

Sincerely yours,

JAMES T. RAMEY, *Executive Director.*

Enclosure: Unclassified report dated June 6, 1956.

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
July 17, 1956.

Mr. LEWIS L. STRAUSS,
Chairman, Atomic Energy Commission,
Washington, D. C.

DEAR MR. STRAUSS: This is in further reference to your letter of July 13, 1956, in response to my letter of July 9, and a subsequent followup on July 11, for a copy of the unclassified Report of the Advisory Committee on Reactor Safeguards on the Detroit Edison (APDA) Power Breeder reactor to be located near Detroit, Mich.

As you know, I directed that the copy of the report be returned unread because it was transmitted on condition that it be treated by the Committee as "administratively confidential." The request for this unclassified report as contained in my letter of July 9, which was ratified and confirmed by the full Committee at its meeting on July 11, did not contain any kind of condition.

I must therefore repeat my request for a copy of the report to be submitted to the Committee without the condition that it be kept "administratively confidential." The basis for your position is apparently that the report was received in a quasi-judicial capacity in connection with APDA's application for an access permit, and should therefor be privileged. The following is an outline of some of the considerations which lead me to reject this contention and support the Committee's unqualified request:

1. Section 202 of the Atomic Energy Act of 1954 contains an unqualified obligation to supply this type of information: "The Commission shall keep the Joint Committee fully and currently informed as to all of the Commission's activities."

2. Even without this unqualified obligation, the Joint Committee has a proper legislative purpose for the safety report.

(*a*) It is understood that the report recommends that the AEC build a prototype reactor to prove out the safety aspects

of the Detroit Edison reactor before the latter reactor is built. This ties in with S. 4146 and H. R. 12061, which, as you know, authorizes and directs AEC to build large-scale and small-scale prototype reactors.

(*b*) It is understood that the report discusses the safety aspects of the Detroit Edison reactor in the light of the EBRI experience. As the AEC knows, the committee felt strongly it should have been currently informed of the EBRI incident. In our letter of June 18, we requested a report on all radiation incidents, and our letter of July 6 asks for a report on possible damage from reactor incidents. Thus the Detroit Edison report is considered as a further aspect of the committee's continuing interest in reactor safety matters. A further legislative interest at the present time is S. 4112 and H. R. 12050, which provides for a governmental indemnity program against reactor hazards.

3. There is some question as to whether the report could be privileged in view of section 146 (b) of the Atomic Energy Act of 1954, which provides as follows:

"(*b*) The Commission shall have no power to control or restrict the dissemination of information other than as granted by this or any other law."

Our examination to date fails to find any power to so control this report in "this or any other law." The policy of this and other laws appears to go in the other direction.

4. There is also some doubt as to whether the report is privileged as confidential information in view of the President's Executive Order No. 10501, which states that information may be classified only for security purposes. No security purpose is indicated here.

5. It would appear that to date the Commission apparently has not treated this report and the Detroit Edison (APDA) project as a quasi-judicial proceeding. The Joint Committee has been notified of no quasi-judicial hearings and no formal presentation of evidence, etc., necessary for quasi-judicial proceeding. Nor has the committee been notified of the establishment of rules for receipt and handling of reports in quasi-judicial proceedings of this nature.

It will be recalled that parts of this safety report were first released in connection with a recent discussion before the House Appropriations Committee to refute an AEC contention that ground-breaking ceremonies for this Detroit Edison reactor would take place next month. Thus it would appear that either the matter should not be considered as being quasi-judicial, or in the alternative that a decision or prejudgment on the quasi-judicial issue has already been reached.

In conclusion I should like to say that I can understand the Commission's desire that no exaggerated publicity be given to its safety reports on reactors. However, it seems to me that there is an overriding public interest in permitting the Joint Committee, the Congress itself, the people in areas surrounding reactor locations, and local and State governments and affected organizations, to know the facts concerning hazards in locating these reactors.

If there is any reasonable basis for treating safety hazards and other unclassified matters as privileged in connection with licensing proceedings, then the questions should be resolved by the establishment

of proposed rules and the usual solicitation of comments from interested parties.

Sincerely yours,

CLINTON P. ANDERSON, *Chairman.*

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C., July 20, 1956.

Hon. CLINTON P. ANDERSON,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR SENATOR ANDERSON: This is in reply to your letter of July 17, in which you renew your request for a copy of the unclassified report of the Advisory Committee on Reactor Safeguards on the Power Reactor Development Co., reactor to be located near Detroit, Mich. We regret that you have insisted on receiving this report, but under the particular circumstances, we are complying with your request and are enclosing a copy of the report in question.

Apparently you misunderstood the closing statement in our letter of July 13. Our references to treatment of the report as "administratively confidential" by the Joint Committee was stated as a "request," not a "condition." We renew our request, which your committee is not bound to honor but which we are bound to make.

Following receipt of the report, meetings have been held with representatives of the Power Reactor Development Co., and the Advisory Committee on Reactor Safeguards with the object of clarifying and assessing the implications of the questions raised by the Advisory Committee. These discussions and studies are continuing. In this as in other cases, if the Commission issues a construction permit it will be only with such conditions attached as will reasonably insure that the public health and safety will be protected.

We realize that it is late in this session of the Congress, but if it proves possible to schedule an executive hearing before your committee on the question of transmitting this report and the broader issues of privilege which are involved, we would be happy to present our position more fully.

Sincerely yours,

LEWIS L. STRAUSS, *Chairman.*

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C., October 9, 1956.

Hon. CLINTON P. ANDERSON,
Chairman Joint Committee on Atomic Energy,
Washington, D. C.

DEAR SENATOR ANDERSON: Following the delivery of this letter, the Commission will be releasing its order in the matter of the Power Reactor Development Co., a copy of which is attached.

You will note that the letter written to the Commission by its Advisory Committee on Reactor Safeguards is being made available to the interveners, the United Automobile Workers, the Congress of Industrial Organizations, et al. This is the letter which, in the course

of correspondence between the Joint Committee and the Commission in July of this year, we requested you to treat as "administratively confidential." Reviewing the circumstances in connection with your request for this document and the Commission's handling of this document, our request that it be treated as "administratively confidential" was a mistake.

Yours very truly,

LEWIS L. STRAUSS.

APPENDIX 7

PRDC CONSTRUCTION PERMIT, AEC ORDER GRANTING HEARING, AND RELATED MATTERS

A. CONSTRUCTION PERMIT

Power Reactor Development Company of Detroit, Michigan (hereinafter "PRDC") on January 7, 1956, filed its application for license under Section 104b of the Atomic Energy Act of 1954 (hereinafter "the Act") to construct and operate a nuclear reactor (hereinafter "the reactor"). Amendments to the application were filed on June 6, 1956, July 12, 1956, July 20, 1956 and July 23, 1956. The original application together with said amendments is hereinafter referred to as "the application".

In its application PRDC has presented information on the general design of the reactor and its program for carrying out further investigations leading to a final design of the reactor. Based on the information submitted by PRDC, the Atomic Energy Commission (hereinafter "the Commission") has found that:

A. The reactor will be a utilization facility as defined in the Commission's regulations contained in Title 10, Chapter 1, C. F. R., Part 50, "Licensing of Production and Utilization Facilities".

B. The reactor will be a utilization facility involved in the conduct of research and development activities leading to the demonstration of the practical value of that type of facility for industrial or commercial purposes.

C. PRDC, Atomic Power Development Associates, Commonwealth Associates, Inc., and United Engineers and Constructors, Inc., are technically qualified to design and construct said reactor.

D. (1) There are identified areas of uncertainty regarding the hazards potential of fast neutron breeder reactors that must be investigated and resolved. From the current state of the technology applicable to such reactors it can reasonably be inferred that there may be other areas of uncertainty not yet identified and requiring investigation and resolution. Of primary importance among the identified areas of uncertainty are:

(a) Whether there exists in the PRDC reactor a positive component of the temperature coefficient similar to that exhibited in the Commission's experimental breeder reactor (EBR–I). The source of the positive component of the temperature coefficient exhibited by EBR–I (presently believed to be caused by dimensional distortion of the core structure) must be identified and its effect, if any, in the PRDC reactor must be eliminated.

(b) Whether there is a credible condition of meltdown and reassembly of the fuel of the PRDC reactor which could result in an explosion that would breach the gastight building surrounding the reactor. Further investigations must be carried out to establish that a credible condition of meltdown with consequent U–235 accumulation of critical dimensions cannot result in such an explosion.

(2) On the basis of information presently available, the Commission believes that the problems relating to the safety of operation of the PRDC reactor will prove to be of a kind that can be satisfactorily resolved within a reasonable time. There is some doubt whether they can be resolved in time to meet the schedule proposed by PRDC in its application and it may turn out that further investigations beyond the program of investigation outlined by PRDC in its application will be needed.

E. Although PRDC has submitted evidence of a commitment from certain banks for a loan of $15,000,000 and has described its plans for obtaining additional financing from its member companies, the evidence submitted to date does not justify a finding with respect to the financial qualifications of PRDC and accordingly the continued effectiveness of this permit will be conditioned upon a further showing in this regard as stated below.

Pursuant to the Atomic Energy Act of 1954 and Title 10, C. F. R., Chapter 1, Part 50, "Licensing of Production and Utilization Facilities," the Commission hereby issues a conditional construction permit to PRDC to construct the reactor as a utilization facility. This permit shall be deemed to contain and be subject to the conditions specified in Sections 50.54 and 50.55 of said regulations; is subject to all applicable provisions of the Atomic Energy Act of 1954 and rules, regulations and orders of the Atomic Energy Commission now or hereafter in effect; and is subject to the conditions specified below:

A. The earliest date for the completion of the reactor is December 15, 1959. The latest date for completion of the reactor is December 15, 1960. The term "completion date" as used herein means the date on which construction of the reactor is completed except for the introduction of the fuel material.

B. The site proposed for the location of the reactor is the location known as Lagoona Beach, Monroe County, Michigan, specified in the application.

C. The general type of facility authorized for construction is a fast neutron breeder reactor, more fully described in Report APDA–108, designed to operate at 300,000 KW equivalent of thermal energy and furnish approximately 100,000 kilowatts of electrical energy, and which will use uranium enriched in the isotope uranium 235 as fuel.

D. Unless, within twelve months from the date of this construction permit, PRDC submits sufficient information relating to its financial resources to enable the Commission to make a finding that the Company has adequate financial resources to meet the requirements of the law and the regulations, this permit shall expire; provided that the Commission may for good cause shown extend the time for the submission of such data.

The conversion of this permit to a license is subject to submittal by PRDC to the Commission (by amendment of the application) of the complete, final Hazards Summary Report (portions of which may be submitted and evaluated from time to time). The final Hazards Summary Report must show that the final design provides reasonable assurance to the satisfaction of the Commission that the health and safety of the public will not be endangered by operation of the reactor in accordance with the specified procedures.

Upon completion (as defined in Paragraph "*A*" above) of the construction of the facility in accordance with the terms and conditions of this permit, upon the filing of any additional information needed to bring the original application up to date, upon finding that the final design provides reasonable assurance that the health and safety of the public will not be endangered by operation of the reactor in accordance with the specified procedures, and upon finding that the facility authorized has been constructed in conformity with the application as amended and in conformity with the provisions of the Act and of the rules and regulations of the Commission, and in the absence of any good cause being shown to the Commission why the granting of a license would not be in accordance with the provisions of the Act, the Commission will issue a Class 104 license to PRDC pursuant to Section 104b of the Act, which license shall expire twenty-five (25) years after the date of this construction permit.

From time to time PRDC may submit to the Commission, in writing, reports upon the progress being made in experimental and developmental work. Following the submission of each such report the Commission will review the data included therein to determine whether the results of such work can be incorporated as technical specifications by appropriate amendment to this permit.

Pursuant to Section 50.60 of the regulations in Title 10, Chapter 1, C. F. R., Part 50, the Commission has allocated to PRDC, for use in connection with the operation of the reactor, 3,929 kilograms of uranium 235 contained in uranium at the isotopic ratios specified in PRDC's application for license. Shipments by the Commission to PRDC in accordance with Schedule 1 of the Appendix hereto will be conditioned upon PRDC's return to the Commission of material substantially in accordance with Schedule 2 of the Appendix.

APPENDIX A TO CONSTRUCTION PERMIT

SCHEDULE 1.—*Estimated schedule of transfers of special nuclear material from the Commission to Power Reactor Development Co.*

Year of transfer	*Kilograms of contained U–235*	*Year of transfer*	*Kilograms of contained U–235*
1958	607	1971	1, 212
1959	0	1972	1, 819
1960	607	1973	1, 819
1961	1, 819	1974	1, 212
1962	1, 819	1975	1, 819
1963	3, 032	1976	1, 819
1964	1, 819	1977	1, 819
1965	3, 031	1978	1, 212
1966	2, 426	1979	1, 819
1967	1, 819	1980	1, 819
1968	1, 819		
1969	1, 819	Total for license period	38, 805
1970	1, 819		

SCHEDULE 2.—*Estimated schedule of transfers of special nuclear material from Power Reactor Development Co. to the Commission*

Year of transfer	Kilograms of contained U-235		Total	Year of transfer	Kilograms of contained U-235		Total
	In scrap	In spent fuel			In scrap	In spent fuel	
1958	122	0	122	1971	242	873	1,115
1959	0	0	0	1972	363	1,309	1,672
1960	122	0	122	1973	363	1,309	1,672
1961	363	920	1,283	1974	242	873	1,115
1962	363	920	1,283	1975	363	1,309	1,672
1963	606	1,839	2,445	1976	363	1,309	1,672
1964	363	2,299	2,662	1977	363	1,309	1,672
1965	606	1,362	1,968	1978	242	873	1,115
1966	485	2,269	2,754	1979	363	1,309	1,672
1967	363	1,792	2,155	1980	363	1,309	1,672
1968	363	1,326	1,689				
1969	363	1,309	1,672	Total for license period			34,876
1970	363	1,309	1,672				

B. STATEMENT BY CHAIRMAN, JOINT COMMITTEE, ON AUGUST 4, 1956

"AEC has informed the Joint Committee on Atomic Energy that it has issued a construction permit to the Power Reactor Development Co., of Detroit, to construct a nuclear powerplant near Monroe, Mich.," Chairman Clinton P. Anderson announced today. "This is known as the Detroit Edison reactor."

The following statement was made by Senator Anderson, in connection with the AEC announcement:

"The issuance of this construction permit, in my opinion, sets a dangerous pattern in the early stages of AEC regulative and quasi-judicial activity for the following reasons:

"1. The AEC has issued this permit as a result of 'star chamber' proceedings in which the report of its Advisory Committee on Reactor Safeguards which raised grave doubts as to the safety of the proposed reactor has never been made public by AEC. It is my understanding that this important report, filed on June 6, 1956, which was prepared by a distinguished committee of experts, has not been retracted or modified by them.

"2. While areas between Federal and State interest in safety and other matters have not been clearly delineated, the Governor of the State of Michigan has apparently been precluded from being heard or participating in any decision to build this reactor in the State of Michigan.

"3. The method of issuance of this permit raises serious questions as to whether the Commission has violated established legal principles by the confusion of its development and promotion functions with its regulative and quasi-judicial responsibilities. The AEC Chairman in testimony before the House Appropriations Committee on June 28 flatly stated that he would attend ground-breaking ceremonies for the Detroit Edison reactor on this August 8. The issuance of the permit on August 3 thus fits into this arrangement perfectly.

"4. From a practical standpoint, AEC might feel obligated to go on through with a bad deal with respect to public safety because they will have permitted the expenditure of huge sums under the con-

struction permit. It is my belief that decisions on safety should be made without any examination of dollars involved but only from the standpoint of human lives.

"We expect to ascertain the full facts involved in this precipitate action. I intend to ask the next Congress to consider the desirability of reorganizing AEC into two separate groups by establishing one group to carry on research, development, and production activities, and a separate group to handle the licensing and regulatory functions. In such an amendment to the Atomic Energy Act, I would make it mandatory that full disclosure of safety hazards be made to the public, and to State and local governmental bodies before a construction permit is issued."

C. STATEMENT BY REPRESENTATIVE HOLIFIELD ON AUGUST 4, 1956

"The issuance of a construction permit for a reactor at Monroe, Mich., to the Power Reactor Development Co. today by the Atomic Energy Commission is in disregard of public safety," Congressman Chet Holifield (Democrat, California) stated today. He went on to say:

"The Reactor Safeguard Committee is composed of 15 of the most eminent experts in the scientific and technical fields. The AEC selected and appointed them to advise on the safety of proposed reactors. No member of the AEC has knowledge on these safety matters superior to this distinguished group.

"The Reactor Safeguard Committee has made the following conclusions as to the Detroit Reactor:

" '1. Even though there are no facts or calculations available to the Committee that clearly indicate that the proposed reactor is not safe for this site, the Committee believes there is insufficient information available at this time to give assurance that the PRDC reactor can be operated at this site without public hazard.

" '2. It appears doubtful that sufficient experimental information will be available in time to give assurance of safe operation of this reactor unless the present fast reactor program of the AEC is amplified and accelerated.

" '3. It is impossible to say whether or not an accelerated program would give sufficient information to permit safe operation of this reactor at the Lagoona Beach site on the time schedule presently proposed.'

"The committee also stated:

" 'The committee considers it important that bold steps be taken advance the development of the fast breeder reactor concept and commends the willingness of the Power Reactor Development Co. to risk its capital and prestige in advancing the development of this reactor concept. But the committee does not feel that the steps to be taken should be so bold as to risk the health and safety of the public. It is important for the AEC to provide sufficient development facilities and experimental information that the safety aspects of the PRDC reactor can be reliably appraised in advance of operation of the reactor itself.'

"The report of the Reactor Safeguard Committee has been suppressed. I believe it has been suppressed deliberately. Only upon the grave insistence of the Joint Committee on Atomic Energy did the

Atomic Energy Commission fulfill its statutory duty of informing the committee. When the report was supplied to the committee it was with the request that it remain 'administratively confidential' and that the public not be made aware of the full impact of the advisory committee's warning.

"The Chairman of the AEC testified on June 28, 1956, before the House Appropriations Committee, that he intended to attend ground-breaking ceremonies on August 8 for the Power Reactor Development Co.'s reactor.

"The Chairman of the Atomic Energy Commission is on the defensive in this matter. Apparently he has decided to make good on his testimony. In overruling the grave warnings of his own Advisory Committee on Reactor Safeguards he has, in my opinion, proceeded in a reckless and arrogant manner.

"I am wiring Gov. Mennen Williams, of the State of Michigan, tonight and asking him to take such steps as he deems necessary to protect life and property in his State. The legally constituted agencies of the State of Michigan have not been consulted by the AEC on this matter in which they have a grave responsibility. The report of the Reactor Safeguard Committee is not available to them. If I were the Governor of Michigan I would take legal steps to prevent construction of any reactor which has not been declared free of hazard.

"As a result of this decision, I will introduce a legislative proposal in the next session of Congress which will separate the promotional activities of the AEC from its quasi-judicial functions. The people of the United States have a right to objective judicial review of safety matters divorced from any promotional objectives which may dominate AEC thinking.

"There is no greater proof of inherent danger to the public from ill-conceived reactor development than the fact that the insurance companies of the United States will not fully cover the hazards to life and property involved nor will they make known the premiums on the small portion of the liability which they have said they are ready to assume.

"The Power Reactor Development Co. is unable to obtain insurance coverage from any company or group of companies in the world to indemnity them against the full scope of the hazard of the Detroit reactor.

"Radiation hazard is a relatively new field of scientific study. Only recently the National Academy of Sciences issued a report drawing preliminary attention to the hazard. While I believe reactors which are proven and well conceived should be constructed, no reactor about which there is serious doubt, such as the Detroit reactor, should be constructed, particularly in light of the limited extent of knowledge as to the danger of radiation."

Mr. Holifield went on to say: "I call upon the President of the United States to direct the Atomic Energy Commission to rescind the construction permit which the AEC has granted to the Power Reactor Development Co. until the Advisory Committee on Reactor Safeguards can come forth with an unequivocal report assuring the safety of the plant."

"Commissioner Thomas E. Murray is to be congratulated for his stand opposing the AEC majority decision."

D. AEC ORDER DATED OCTOBER 8, 1956, GRANTING HEARING

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

Docket No. F–16

In the Matter Of Power Reactor Development Company

NOTICE OF HEARING, ORDER AND MEMORANDUM

At a session of the Atomic Energy Commission held in Washington, D. C., on the 8th of October, 1956, Chairman Lewis L. Strauss and Commissioners Willard F. Libby, Thomas E. Murray, and Harold S. Vance present, it appeared that:

On January 7, 1956, Power Reactor Development Company (hereinafter called "the applicant") filed its application for a construction permit, under Section 104b. of the Atomic Energy Act of 1954, to build a nuclear reactor. Amendments to the application were filed on June 6, July 12, July 20 and July 23, 1956. On August 4, 1956, the Commission issued a provisional construction permit (CPPR–4) under section 50.35 of its regulations (10 CFR 50.35) authorizing construction of said reactor subject to certain conditions.

Petitions for leave to intervene and further relief were filed on August 31, 1956, on behalf of the International Union, United Automobile, Aircraft and Agricultural Implement Workers of America, AFL–CIO, Walter P. Reuther, Emil Mazey and Carlos Gastambide; on behalf of the International Union of Electrical, Radio and Machine Workers, AFL–CIO, James B. Carey, Al Hartnett and James Douglas; and on behalf of the International Union, United Paperworkers of America, AFL–CIO, Harry Sayre, Frank Grasso, Max Van Wickle, Joseph Stanifer, Lawrence Helten, John Jennings, and Frank Meade, Jr.;

On September 14, 1956, the applicant filed answering papers to said petitions insofar as they request leave to intervene and suspension of said construction permit pending a final determination of the matters raised by said petitions, and the applicant moved that the Commission strike certain statements from said petitions; and

On September 19 and 20, 1956, petitioners filed additional statements in opposition.

Upon due consideration of the foregoing, and in light of the considerations expressed in the annexed memoranda of the Commissioners,

It is Ordered That:

(1) The petitions for leave to intervene filed on behalf of the above named petitioners are granted and said interveners are made parties to the hearing ordered herein;

(2) Pursuant to Section 189 of the Atomic Energy Act of 1954 and the Commission's regulations, a hearing shall be held on said application upon the following Specification of Issues:

A. 1. Whether there is information sufficient to provide reasonable assurance that a utilization facility of the general type proposed in the application can be constructed and operated at the location proposed therin without undue risk to the health and safety of the public.

2. Whether there is reasonable assurance that technical information omitted from and required to complete the application will be supplied.

B. Whether, pursuant to Section 50.40 (b) of the Commission's regulations, the applicant is financially qualified to engage in the proposed activities; and whether, pursuant to Section 50.60 (c) (2) of the Commission's regulations, the applicant is financially qualified to receive an allocation of special nuclear material.

C. With respect to any matter in controversy in this proceeding, whether the Commission may, or should, grant any exemption pursuant to Section 50.12 of its regulations on the ground that such exemption is "authorized by law and will not endanger life or property or the common defense and security and . . . [is] otherwise in the public interest."

D. If the issues in the proceeding are resolved in favor of continuing the construction permit, what additional or different provisions, if any, should be incorporated in it.

(3) Jay A. Kyle, Esq., is designated as the presiding officer to conduct the hearing. The hearing shall commence on November 13, 1956, in Washington, D. C., at the offices of the Commission or on such adjourned date or at such other place as may be directed by the presiding officer. Pursuant to Section 2.751 (b) of the Commission's regulations, the presiding officer at the conclusion of the hearing shall, without rendering an intermediate decision, certify the record of the hearing to the Commission.

(4) The interveners' requests for an immediate suspension of said construction permit pending the final determination of the matters raised by said petitions are denied without prejudice to ultimate determination by the Commission as to whether the permit should be continued, modified or vacated.

(5) On or before October 22, 1956, the applicant and the interveners shall file and serve their answers pursuant to Section 2.736 of the Commission's regulations.

(6) A copy of the letter dated June 6, 1956, from C. Rogers McCullough, Chairman, Advisory Committee on Reactor Safeguards, to the General Manager shall be sent to each of the interveners and placed in the Commission's public document room.

(7) Papers required to be filed with AEC in this proceeding shall be filed with the Secretary, Atomic Energy Commission, 1901 Constitution Avenue, N. W., Washington 25, D. C. Pending further order of the presiding officer, the parties shall file ten copies of each such paper with AEC and where service of papers is required on other parties shall serve five copies on each.

[SEAL] ATOMIC ENERGY COMMISSION,
By WOODFORD B. MCCOOL,
Secretary.

Dated October 8, 1956.

E. MEMORANDUM OF COMMISSION PUBLISHED OCTOBER 9, 1956, CONCERNING ORDER GRANTING HEARING

MEMORANDUM OF THE COMMISSION

1. The provisional construction permit was issued on August 4, 1956. Attached hereto is a copy of the letter of August 4, 1956, to the company forwarding the permit. On August 31, 1956, which was within 30 days thereof, the petitioners made their request for leave to intervene and for further relief.

2. The allegations of the petitioners purporting to show their interest in the proceeding are not controverted by the applicant. Prima facie, these allegations provide a basis for the granting of leave to intervene in the proceedings before the Commission. Administrative agencies may permit persons to intervene even though their interest may not be such as to entitle them to judicial review.

3. Section 2.102 of the Commission's rules of practice provides:

"(a) The AEC will, upon request of the applicant or an intervener, and may upon its own initiative, direct the holding of a formal hearing prior to taking action on the application. If no prior formal hearing has been held and no notice of proposed action has been served as provided in paragraph (b) of this section, AEC will direct the holding of a formal hearing upon receipt of a request therefor from the applicant or an intervener within 30 days after the issuance of a license or other approval or a notice of denial.

"(b) In such cases as it deems appropriate, AEC may cause to be served upon the applicant, and published, a notice of proposed action upon his application and shall cause copies thereof to be served upon interveners or others entitled to or requesting notification. The notice shall state the terms of the proposed action. If a formal hearing has not been held prior to issuance of the notice, AEC will direct the holding of a formal hearing upon the request of the applicant or an intervener received within fifteen days following the service of the notice."

4. The interveners' request for hearing was filed within the time specified in our rules. Accordingly, the application for a construction permit is being set down for hearing and referred to a hearing examiner to conduct a formal hearing.

5. In adopting section 2.102 the Commission established alternative procedures with respect to the issuance of permits and licenses. Under the section, the Commission may order a prior hearing before taking action; or issue a notice of proposed construction permit or license allowing 15 days thereafter for filing requests for hearing; or, as was done in the present proceeding, may issue a permit or license subject to the receipt within 30 days of a proper request for hearing from the applicant or an intervener. Whichever course is followed, the proceeding is not complete until the opportunities for hearing have expired, or if a hearing has been properly requested and allowed, such hearing has been held and the issues determined.

6. Since a proper and timely request for hearing has been made and allowed in this proceeding, the applicant for the permit must demonstrate at the hearing that it is able to satisfy those requirements of law and the Commission's regulations which are in controversy. For this reason, certain collateral matters raised by the interveners'

petitions (such as their references to the phraseology of the construction permit) do not require consideration at this time.

7. Applicant's motion to strike certain allegations from the petitions raises questions of an evidentiary nature which are being left for determination during the hearing.

8. Since the permit does not authorize the applicant to possess or use any special nuclear or radioactive material and since activities authorized by the construction permit do not create nuclear hazards during the period of construction, the interveners' request for suspension of the construction permit pending the hearing is being denied, without prejudice, to ultimate determination by the Commission as to whether the permit should be continued, modified, or vacated.

9. The order contains a provision directing that copies of the report dated June 6, 1956, from C. Rogers McCullough, Chairman of the Advisory Committee on Reactor Safeguards, to K. E. Fields, General Manager, be sent to the interveners and placed in the Commission's Public Documents Room. This action is being taken because a copy of the Advisory Committee's report was sent to the Power Reactor Development Co. on June 18, 1956, in connection with discussions between the AEC staff and representatives of the company. The Commission has concluded that the public interest would best be served in this instance by making the document available to the interveners and the public.

By LEWIS L. STRAUSS, *Chairman.*
By WILLARD F. LIBBY, *Commissioner.*
By HAROLD S. VANCE, *Commissioner.*

F. OPINION OF COMMISSIONER MURRAY DISSENTING IN PART TO ORDER OF OCTOBER 8, 1956

On August 2, 1956, the majority of the Commission authorized the issuance of a conditional construction permit to the Power Reactor Development Co. I did not concur with the majority because the information then before the Commission in my opinion was insufficient to provide reasonable assurance that a facility of the general type proposed could be constructed and operated at the proposed location without undue risk to the health and safety of the public. In this connection, I placed my principal reliance on a letter dated June 6, 1956 (a copy of which is attached), from the Advisory Committee on Reactor Safeguards, signed by C. Rogers McCullough, Chairman of the Committee.

As late as September 28, 1956, the Commission was informed that the Advisory Committee on Reactor Safeguards has not changed its position in respect to its letter of June 6 and also that there was no new information. Under these circumstances I am of the opinion that this permit should be suspended pending conclusion of the hearing in this matter.

In other respects I concur in the decision of the majority of the Commission.

By THOMAS E. MURRAY, *Commissioner.*

G. LETTER FROM AEC TO PRDC ATTACHED TO COMMISSION MEMORANDUM PUBLISHED OCTOBER 9, 1956

AUGUST 4, 1956.

POWER REACTOR DEVELOPMENT CO.,
Detroit, Mich.

GENTLEMEN: Enclosed is a construction permit issued by the Atomic Energy Commission authorizing Power Reactor Development Co. to construct the utilization facility described therein.

The issuance of this permit is based on the information and representations contained in your original application filed on January 7, 1956, and amendments thereto filed on June 6, 1956, July 12, 1956, July 20, 1956, and July 23, 1956, including PRDC's program for carrying out further investigation and experiments leading to the final design of the proposed reactor.

As specified in the construction permit, prior to taking action on the conversion of the construction permit to a license to operate the facility a final hazards summary report must be submitted to AEC for evaluation and a determination that the reactor can, in fact, be operated without undue risk to the health and safety of the public.

As stated in the construction permit, the Commission believes that the safety problems associated with the reactor will prove to be of a kind which can be resolved within a reasonable time. The Commission regards the fast breeder program as a very important program and will use its best efforts to assist the company to resolve these problems as completely and as quickly as possible. However, the Commission wants it to be clearly understood that in issuing this construction permit the emphasis is on the fact that it is a conditional one and that the Commission can make no commitment to convert the permit to a license until it is satisfied on all safety matters.

Also, as you are aware, PRDC has not submitted to date sufficient information for the Commission to make a finding with respect to financial qualifications. Paragraph 3d of the permit contains a condition that its continued effectiveness will be dependent upon a showing within 12 months by PRDC that its financial resources are such as to enable the Commission to make the required finding, unless for good cause shown the Commission extends the time for submission of such data.

You will observe that the final paragraph of this permit establishes an allocation of 3,929 kilograms of contained U–235 for use in connection with the operation of this facility. This allocation represents the quantity of U–235 estimated to be required for burn up and losses, plus inventory. You will also observe that shipments of U–235 by the Commission to PRDC in accordance with schedule 1 of the appendix to the permit will be conditioned upon PRDC's return to the Commission of material subsequently in accordance with schedule 2 of the appendix. The issuance of this permit and the allocation of U–235 contained therein is not to be construed as a commitment by the Commission to supply the U–235 in any form except UF_6.

The issuance of this permit does not constitute a commitment on the part of the Commission to provide transportation or processing services with respect to the spent fuel.

Pursuant to established Commission policy, the Commission will undertake to supply PRDC's boron–10 requirements, under appro-

priate terms and conditions and within the limitations of available supply, until such time as boron–10 is available from a commercial source of supply.

An allocation of source material in the form of depleted uranium is not being made at this time pending completion of a study of the classification of this material.

Please communicate with us in the event you have any questions concerning any of the provisions of the construction permit.

Sincerely yours,

H. L. PRICE,
Director, Division of Civilian Application.

APPENDIX 8

REPORT OF ADVISORY COMMITTEE ON REACTOR SAFEGUARDS ON PRDC APPLICATION—MADE PUBLIC BY AEC ON OCTOBER 9, 1956

JUNE 6, 1956.

Subject: Power Reactor Development Co. (Atomic Power Development Associates) Fast Power Reactor (Reports APDA 108 and 114)

Mr. K. E. FIELDS,
General Manager United States Atomic Energy Commission, Washington 25, D. C.

DEAR MR. FIELDS: The present status of the reactor being proposed by the Power Reactor Development Co., associated with Atomic Power Development Associates, was reviewed by the Advisory Committee on Reactor Safeguards at its 18th meeting on June 3, 1956. This review included the design of the reactor, the state of information on the nuclear properties and the relation of the reactor to its containment and its site. The proposed PRDC reactor represents a greater step beyond the existing state of the art than any other reactor of comparable power level which has been proposed by an industrial group.

From this review the following conclusions were derived:

1. Even though there are no facts or calculations available to the Committee that clearly indicate that the proposed reactor is not safe for this site, the Committee believes there is insufficient information available at this time to give assurance that the PRDC reactor can be operated at this site without public hazard.

2. It appears doubtful that sufficient experimental information will be available in time to give assurance of safe operation of this reactor unless the present fast reactor program of the AEC is amplified and accelerated as detailed below.

3. It is impossible to say whether or not an accelerated program would give sufficient information to permit safe operation of this reactor at the Lagoona Beach site on the time schedule presently proposed.

The following program of investigation is suggested in order to provide information to judge the safety of the proposed operation:

(NOTE.—APDA–108: Description of Developmental Fast Neutron Breeder Power Reactor Plant, September 1, 1955. APDA–114: Loca-

tion and Environmental Safety of Developmental Fast Breeder Power Reactor Plant. Some Supplementary Safeguard Topics Relevant to the Power Reactor Development Co. Reactor.)

1. The origin of the positive component of the temperature coefficient in EBR–I must be established. A clear demonstration must be given that a coefficient of this magnitude cannot exist in the PRDC design. The experimental program required would involve three phases:

(*a*) Study of the spontaneous behavior of a new EBR–I core designed with rigid fuel elements to insure against the possibility of bowing. Such a study might have to include experiments with both series and parallel flow through core and blanket.

(*b*) Extensive studies of oscillator experiments on the PRDC design with a simulator, using a wide variety of component temperature coefficients and associated time constants. These studies should be designed to demonstrate that oscillator tests in the startup of the PRDC reactor can produce all the temperature coefficient information required to assure safe transient properties of the reactor, i. e., a negative prompt temperature coefficient of sufficient magnitude to prevent a fuel meltdown.

(*c*) Further experimental work on ZPR–III to show the magnitude and size of the Doppler effect in order to verify the theory.

2. The magnitude, time constant, and sign of the various components of the temperature coefficients in the PRDC design must be evaluated together with a reasonably complete theoretical understanding of their origin in terms of the mechanical design. This program has three aspects:

(*a*) A demonstration by the simulator studies under 1 (*b*)—that the proposed startup program on PRDC can give the information required over a wide range of possible coefficients and time constants.

(*b*) Conduct of oscillator studies on the EBR–II reactor to show that they are feasible and capable of being interpreted to give the necessary information.

(*c*) Startup program on the PRDC reactor itself to obtain the final information needed before the reactor can be safely operated at full power without meteorological restrictions.

The objective of this program must be to ascertain whether the various negative coefficients are sufficient to prevent meltdown under any conceivable circumstances of control maloperation.

3. The Committee as a whole was not satisfied with the evidence presented that no credible supercriticality accident resulting from meltdown could breach the container. It is felt that a more extensive theoretical and experimental program to examine all the possibilities needs to be established and pursued vigorously. The following are examples: mechanical mockup studies designed to study distortion of core on sudden melting, criticality studies in ZPR–III design to investigate maximum supercritical arrangements, detailed design studies of the reactor structure, with supporting mockup experiments, to insure subcritical distribution of melted fuel and to assure that free fall of core parts cannot reassemble a critical mass suddenly.

4. It is considered critically important that the EBR–II program be pursued more aggressively and coordinated more closely with the PRDC design than is presently the case. The EBR–II program is the only program now constituted which could provide engineering information and operating experience on a high-power-density fast reactor in advance of the scheduled date for operation of the PRDC reactor.

The nature and content of the EBR–II program which the Committee considers essential depends on the outcome of investigation 3 above. If it can be shown that a supercritical accident with sufficient energy release to breach the building cannot take place, then the EBR–II program should be aimed at providing general engineering information relevant to the economical design and safe operation of the PRDC reactor.

On the other hand, if it cannot be shown that breaching of the building during a meltdown is impossible, then a much more extensive EBR–II program is required. The test reactor to be operated as EBR–II should then be a genuine prototype of the PRDC reactor. The fuel elements of the test reactor should be identical in all essentials to those proposed for the PRDC reactor, and operated at power densities at least as high as those to be used in the PRDC reactor. The static and dynamic properties of the test reactor should be fully investigated, completely understood theoretically and proved incapable of causing meltdown. These properties should be investigated both for the reactor with its initial charge of U–235 and U–238 and for the reactor with the steady-state concentration of plutonium in the core.

5. The program should not be limited to the above points but should be broadened to whatever extent may be shown necessary by the program itself.

The Committee wishes to note that the experience that now exists on fast power reactors of high power density is not wholly reassuring. While the EBR–I incident is not directly relevant in this connection because the reactor was known to possess an unstable prompt power coefficient under the conditions of the terminal experiment, nevertheless the fact remains that the origin of this unstable coefficient has not been clearly established and therefore its possible occurrence in the PRDC design cannot be definitely excluded on the basis of present experimental information. Opinions differ as to whether its absence can be completely assured in a safe way by the oscillator tests in the prestartup program proposed for the PRDC reactor in situ.

The Committee considers it important that bold steps be taken to advance the development of the fast breeder reactor concept and commends the willingness of the Power Reactor Development Co. to risk its capital and prestige in advancing the development of this reactor concept. But the Committee does not feel that the steps to be taken should be so bold as to risk the health and safety of the public. It is important for the AEC to provide sufficient development facilities and experimental information that the safety aspects of the PRDC reactor can be reliably appraised in advance of operation of the reactor itself.

Sincerely yours,

C. Rogers McCullough,
Chairman, Advisory Committee on Reactor Safeguards.

APPENDIX 9

AEC LETTER DATED OCTOBER 17, 1956, TO EXECUTIVE DIRECTOR, JOINT COMMITTEE ON ATOMIC ENERGY, FORWARDING AEC REPORTS ON CERTAIN APPLICATIONS FOR CONSTRUCTION PERMITS

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington 25, D. C., October 17, 1956.

Mr. JAMES T. RAMEY,
Executive Director, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR MR. RAMEY: In order to assist the Joint Committee staff in the studies it is making in connection with the Commission's licensing procedures, we are enclosing reports which discuss the principal factors considered by the Commission and its staff in the issuance of power reactor construction permits to the organizations listed below:

Commonwealth Edison Co.
Consolidated Edison Co.
Power Reactor Development Co.

Similar reports are being prepared on the construction permit issued to General Electric Co. (power reactor), and the licenses issued to Armour Research Foundation (research reactor) and Battelle Memorial Institute (research reactor). These reports will be sent to you as soon as they can be completed.[43]

These six cases include all of the power reactor cases on which construction permits have been issued to date and two typical cases involving research reactors for which operating licenses have been granted.

All of the unclassified documents referred to in the attached reports are on file in the Commission's public document room.

For your information, consideration is being given to the adoption of a practice in future cases of issuing a summary memorandum at the time a construction permit or operating license is granted or denied, explaining the issues and the decision reached by the Commission.

Sincerely yours,

K. E. FIELDS, *General Manager.*

Enclosures: Three reports as described.

A. REPORT ON THE CONSIDERATIONS LEADING TO THE ISSUANCE OF A CONSTRUCTION PERMIT AND THE ALLOCATION OF SPECIAL NUCLEAR MATERIAL TO THE POWER REACTOR DEVELOPMENT CO.

The Power Reactor Development Co. (PRDC) is the new organization formed by the Detroit Edison group to undertake construction of a reactor facility. Twenty-six industrial companies, more than half of which are utilities, are represented in this new organization.

License application.—PRDC filed a formal license application on January 7, 1956. Amendments to the application were filed June 6, July 12, July 20, and July 23, 1956. The original application was for a class 104 license for a period of 25 years, "to design, construct, and

[43] See Appendix 10.

operate a developmental fast neutron breeder reactor * * * to have an initial capacity of producing 100,000-kilowatt electricity * * *." The application states that PRDC will build and operate the reactor and related facilities, including the fuel handling system, coolant system and steam generators. The conventional steam turbine generator and related facilities including the transmission line will be built, owned and operated by the Detroit Edison Co. The PRDC will enter into a contract with Detroit Edison providing for the sale of steam produced by the reactor, which will be located on a site leased from Detroit Edison for 25 years, the period of the requested license. Present estimates fix the cost of the proposed reactor and related facilities to be owned by PRDC at $40,511,000.

By the June 6, 1956, amendment PRDC specifically requested a class 104b license and revised its statements on technical and financial qualifications. The amendment also included a revised estimate of requirements for source and special nuclear materials, and the estimated earliest and latest completion dates.

In this amendment, PRDC requested the following specific AEC licenses and commitments:

"1. That the Commission grant applicant a single license for a period of 25 years authorizing the following activities:

"(a) The design, construction, ownership and operation of the reactor heretofore described as a utilization facility, pursuant to the provisions of section 104b of the Atomic Energy Act of 1954;

"(b) The possession and use of special nuclear material in the amounts required to construct and operate the proposed reactor, pursuant to the provisions of section 53a (2) of the Atomic Energy Act of 1954; and

"(c) The possession and use of source material in the amounts required to construct and operate the proposed reactor, pursuant to the provisions of section 63a (2) of the Atomic Energy Act of 1954.

"2. That the Commission issue to applicant a construction permit for the reactor heretofore described.

"3. That the Commission agree to make available to applicant special nuclear material, depleted uranium and Boron 10 in the amounts required to operate the reactor for the period of the license, as set forth in amended exhibit VII.

"4. That the Commission agree for the period of the license to furnish the transportation (1) for the special nuclear material to the location where such material will be fabricated for use in the reactor, and (2) for the irradiated fuel and blanket elements from the reactor site to the Commission facilities for recovery and decontamination of the special nuclear material contained in such elements."

Construction schedule.—The June 6, 1956, amendment further stated:

"Current schedules indicate the earliest completion date to be December 15, 1959. The latest completion date now foreseeable in view of the required research and development work is December 15, 1960. It is assumed that 'completion date' means the date on which construction of the reactor is completed, except for the introduction of the fuel material."

The July 12, 1956 amendment to the application was accompanied by a covering letter which stated:

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"The Company is prepared to begin construction work as soon as a construction permit is granted. Steps which are planned, but which are awaiting the Commission permit are as follows:

"1. Break ground for the plant.

"2. Accept the preferred bid on the reactor building. These bids have been received, evaluated and an immediate award may be made. Fabrication is scheduled to begin in November 1956.

"3. Authorize Commonwealth Associates, our architect-engineer, to proceed with detailed design of building foundations.

"4. Proceed with site development work including construction of railroads, roads and installations of water, sewage and power facilities.

"5. Construct temporary buildings so that United Engineers and Constructors, our erection engineer, may start foundation work by September 1956 and thereby have the foundations in before the heavy frosts are encountered."

Technical qualifications.—PRDC has engaged Atomic Power Development Associates, Inc., to provide services in connection with the development, design, construction and operation of the reactor. Commonwealth Associates, Inc., of Jackson, Mich., has been designated architect-engineers and United Engineers and Constructors, Inc., designated construction engineers. A list of the principal officers of PRDC's member companies and contractors with biographical data has been submitted by PRDC. From these data and other information available the AEC staff concluded that PRDC and its contractors are technically qualified to design and construct the reactor.

Source and special nuclear material requirements.—The special nuclear material required for the reactor is uranium enriched to 27 percent in the isotope U–235 as fuel. The total net requirement of fuel in terms of contained U–235 is presently calculated at 3,929 kilograms for the period of the license.

Depleted uranium (cascade tails) is proposed as a breeder blanket in the reactor. The total requirement is presently calculated at 886,795 kilograms for the period of the license.

The AEC staff has reviewed the detailed PRDC material requirements and determined that the quantities are reasonable for a reactor of this concept and power level.

Financial qualifications.—The June 6, 1956, amendment to PRDC's application stated:

"Members of the applicant have contributed to date the sum of $1,501,400 for the initial purpose of the applicant. It is anticipated that the applicant will shortly receive an additional $887,500 from its members. Further contributions by the member companies will be committed by the member companies as soon as certain of the conditions set forth in the proposal to the Commission dated March 30, 1955, have been met. See exhibit I of this application. The applicant will borrow $15 million from retirement trust funds through banks. A commitment from the leading institutions, which are J. P. Morgan & Co., Bankers Trust Co., Chase Manhattan Bank and First National Bank of New York, is expected by July 1, 1956, and the details of the loan are presently being prepared by representatives of the applicant, its member companies, and the said banks."

The July 20, 1956, amendment to the application added the following paragraph to the statement on financial qualifications:

"Attached hereto and made a part of as exhibit XIV is a letter dated July 13, 1956, addressed to the applicant from J. P. Morgan & Co., Bankers Trust Co., Chase Manhattan Bank and the First National City Bank in which those signatory banks make a commitment in their several capacities as trustees of various pension trusts to lend to applicant an aggregate of $15 million on the terms and conditions in said letter set forth, which said commitment has been accepted by applicant."

This $15 million represents approximately 37 percent of the total cost of the facility, as estimated by the applicant. One of the assumptions on which this loan commitment was based was that "some or all of the member companies severally propose to contribute to PRDC sums which, together with the proposed borrowing, are estimated to be sufficient to construct, complete, and place in operation the reactor plant."

The applicant's March 30, 1955, proposal to the Commission contains the following statements:

"It would be important to us that the licensee corporation be reasonably sure of its ability to obtain adequate insurance. We understand that the Commission has joined with representatives of the insurance industry in a study of this important matter.

"In making this proposal we assume and regard as essential the following: (1) that neither the licensee corporation, nor any member thereof or contributor thereto, will become subject to the Public Utility Holding Company Act by reason of participation in this project, and (2) that the contributions of the members to the licensee corporation will qualify as deductible for Federal income tax purposes."

Legislation with respect to the problem of insurance or other indemnification against third party liability was introduced at the 84th Congress but was not enacted. Representatives of PRDC and some of its members and contributors have appeared before congressional committees to urge the passage of legislation to amend the Public Utility Holding Company Act in the respects deemed necessary by the company, and the applicant has applied for a ruling from the United States Bureau of Internal Revenue with respect to the tax treatment of contributions of the members to the licensee corporation. The requested legislation has not been enacted and at the time the permit was issued the requested ruling had not been obtained. Accordingly, the applicant has not obtained formal commitments from its member companies which would be sufficient, in conjunction with the loan commitment above referred to, to cover the estimated cost of designing, constructing and placing in operation the proposed plant.

On the basis of the foregoing and other facts the staff concluded that PRDC has not furnished the AEC with adequate information for the Commission to make a determination that it is financially qualified to engage in the proposed activity and to assume responsibility for the payment of AEC charges for the use, consumption, or loss of special nuclear material.

Data submitted with application

The amended application includes the following additional data:

(*a*) Copy of the applicant's March 30, 1955, proposal to the Commission.

(*b*) Copy of articles of incorporation of PRDC.

(*c*) Copy of the bylaws of PRDC.
(*d*) List of the trustees of PRDC.
(*e*) List of the members of PRDC.
(*f*) Draft copy of proposed contract between PRDC and AEC.
(*g*) Aerial photo and topographic map of the proposed site.
(*h*) Copy of Report APDA–108, "Description of Development Fast Breeder Power Reactor Plant," dated September 1, 1955.
(*i*) A revised estimate of source and special nuclear material requirements. (Added by amendment No. 1.)
(*j*) Reports entitled "Observations on Past and Future Operation of EBR–1" and "Containment of PRDC Reactor Accidents." (Added by amendment No. 2.)
(*k*) Biographical data on the officers of PRDC and member companies, additional data on financial qualifications, and a list of several agencies in the State of Michigan which might be expected to take an interest in the project. (Added by amendment No. 3.)
(*l*) Corporate information and biographical data on its design and construction contractors. (Added by amendment No. 4.)

In addition, the applicant from time to time made oral presentations and submitted written data to the Commission's Advisory Committee on Reactor Safeguards.

Technical promise.—The PRDC proposal for Commission assistance in constructing its fast breeder reactor was accepted as a basis for negotiations under the Commission's power demonstration reactor program upon the basis of a determination by the Commission that the project would significantly advance power reactor technology and hasten the advent of economically competitive nuclear power. The Commission staff believes that the basic concept is sound and that the applicant has obtained highly competent assistance.

Allocation of U–235 to PRDC.—The applicant considers it necessary that the AEC assure the licensee that the AEC will supply special nuclear material for the life of the license. The Commission staff believes that an allocation, presently calculated at 3,929 kilograms of contained U–235, can be made to PRDC with the understanding that AEC will deliver new material against this allocation on the schedule shown in the annex to the construction permit, provided the company returns scrap and spent fuel material on the schedules indicated.

Based on PRDC's estimates of requirements, the AEC staff has calculated that the total quantity of special nuclear material to be shipped by AEC to PRDC's fuel fabricator would be 38,804 kilograms of contained U–235 (143,720 kilograms of uranium enriched to approximately 27 percent in the isotope U–235); that the total quantity of fabrication scrap to be recovered and returned to AEC would be 7,749 kilograms of contained U–235 (28,700 kilograms of uranium enriched to approximately 27 percent in the isotope U–235); that the total quantity of spent fuel to be recovered and returned to AEC would be 27,126 kilograms of contained U–235 in uranium enriched to approximately 25 percent in the isotope U–235; and that the maximum quantity of material outstanding at any one time (burn-up, losses, and inventory) would be 3,929 kilograms of contained U–235.

The Commission staff determined that such distribution of the special nuclear material would not cause the quantity of U–235 determined by the President to be available for distribution to licensees

pursuant to section 53 of the act to be exceeded, assuming that the scheduled returns can be processed on a current basis to a usable state.

RESPONSIBILITY FOR REACTOR SAFETY

Amendment No. 2 to the license application, filed July 12, 1956, states:

"(*a*) Responsibility to public for safety of reactor design and operation:

"(1) Applicant, its members, trustees, officers, consultants, and contractors, are continuously aware of their responsibility to the public. Applicant recognizes the necessity for thorough consideration of the effect of the operation and design of a large power reactor on the health and safety of the public, and applicant has thoroughly considered this factor in connection with its reactor. The design of applicant's reactor has been reviewed by competent experts on fast neutron breeder reactor technology and from these reviews it is reasonable to conclude that all hazards questions can be satisfactorily resolved.

"(2) Applicant has made plans for an extensive startup test program to establish the safety of operation of its reactor and recognizes that if the reactor should prove in any respect to be unsafe at any time during such preliminary test period of operation, subsequent operation of the reactor must be deferred until each characteristic adversely affecting the safety of operation of the reactor is corrected.

"(3) In view of the developmental nature of applicant's program, it is reasonable to expect and is expected that experimental data on various design aspects of applicant's reactor will be obtained during the period of construction and, therefore, will be available prior to the issuance of a license to operate the reactor."

SAFETY CONSIDERATIONS

The Power Reactor Development Co. fast breeder sodium-cooled reactor is intended to operate on U–235 at a power level of 300 megawatts of heat with a corresponding gross electrical output of 100 megawatts. The nuclear chain reaction is intended to be maintained by neutrons predominantly in the high energy range from 0.1 to 0.3 million electron volts.

Site.—The application states that the location proposed for the reactor is a 900-acre site known as Lagoona Beach in Monroe County, Mich., on the shore of Lake Erie, 29 miles southwest of Detroit. The property lies in a farming territory about 7½ miles north of the city of Monroe whose population is approximately 20,000. There are about 32,000 inhabitants within a 10-mile radius of the reactor, but less than 2,000 year-round inhabitants within a 5-mile radius. At present no industrial plants are located within this 5-mile zone. The site itself provides a minimum exclusion radius of 2,900 feet.

The reactor core, as described by the applicant, is an assembly of partially enriched (about 27 percent U–235) U–Mo alloy pins (0.158 inch OD) clad with zirconium. The reactor core, which contains the fuel alloy, is approximately cylinderical, 31 inches high, and is located in the center of the reactor. Each subassembly in the core consists of 144 fuel pins arranged in a square lattice through which sodium

coolant flows in the axial direction. The total number of fuel subassemblies is 91. The corresponding mass of U–235 is about 500 kilograms.

The core is completely surrounded by a sodium-cooled, depleted uranium breeder blanket in which the uranium is contained in stainless steel clad rods. Sodium flows up in series through the core and end blankets and in parallel with the core through the side blankets. The core and blanket are contained and supported in a stainless-steel vessel which is surrounded by neutron and gamma shielding.

Two boron control rods are used to vary reactor power level and to accommodate neutron density changes which occur during operation due to temperature variation and fuel consumption and growth. There are 8 safety or scram elements containing a nuclear poison located in a ring about 7 inches from the core centerline.

Heat is removed from the reactor core and blanket by circulating molten sodium. The heat is transferred to a secondary sodium system and is then transferred to water and steam in a once-through steam generator. The portion of the plant containing radioactive material is enclosed in a gastight steel building while the boilers and turbine-generator and associated equipment are located in a conventional building adjacent to the steel container.

Some of the important features of the proposed reactor design specifications which, in the opinion of the AEC staff, tend to assure the safety of the reactor are:

(*a*) Limitation of the reactivity value of the boron control rods to less than that necessary to make the reactor prompt critical.

If the core is loaded properly, this would prevent it from becoming prompt critical should the boron rods be removed from the core. Operational procedures can be carefully designed to avoid errors in loading.

(*b*) The rather high dilution of the core with U–238 ($28/25 \approx 2.7$). Based on present calculations this should provide assurance that there is no inherent instability in the reactor arising from Doppler. As the core temperature increases, Doppler effect causes an increase in the fission probability of U–235 which results in a positive temperature coefficient. At the same time, however, the same effect causes the probability of nonfission capture in U–238 to increase with a resulting negative effect on reactivity. Therefore, an admixture of sufficient U–238 introduces a negative coefficient of reactivity, which balances the positive coefficient of U–235. The minimum U–238/U–235 ratio for which the temperature coefficient of reactivity is expected to be negative has been calculated to be about 2.

(*c*) A fuel element loading mechanism which has a slow and mechanically limited insertion rate.

The movement of a fuel element during loading in the direction of increasing reactivity is limited mechanically to a very low rate and can be quickly reversed for rapid withdrawal if necessary. Careful watch can be maintained during loading operations. If any deviation from normal is observed, the fast backout can be used and thus probability of any approach to prompt criticality can be minimized.

(*d*) A secondary sodium coolant system which separates the primary coolant loop of the reactor from the water (steam generating) loop.

The secondary sodium loop eliminates the presence of cooling water in the vicinity of the core and hence minimizes the probability of a moderator accident. This arrangement also prevents the spread of radioactivity which would result from a reaction between water and the radioactive sodium of the primary loop. Furthermore, any resulting chemical reaction between water and sodium of the secondary loop would not involve radioactive components.

(*e*) Important design steps to guard against draining of the reactor vessel and subsequent melting of the core due to fission product decay heat.

No penetrations exist in the reactor vessel for drains. The inlet sodium pipes for the core and blanket are brought up to the level of the outlet from the vessel to prevent any siphon action from draining the vessel following an external leak. The reactor vessel itself is enclosed in a steel tank which surrounds the primary shield. The size of this tank is such that if the reactor vessel should fail the sodium level is sufficiently high to keep the fuel elements immersed in the coolant.

(*f*) Placement of removable experimental coupons of various structural materials in different regions of the core and blanket to provide a continuous check on the radiation effects on the strength and other properties of the reactor vessel.

Significant technical meetings among AEC, ACRS, APDA, and PRDC personnel, involving discussions of the hazards associated with the PRDC fast breeder.—Early in 1955 the Advisory Committee on Reactor Safeguards set up a subcommittee to study the PRDC reactor and to hold preliminary meetings with the designers (Atomic Power Development Associates, Inc.) relative to the hazards problems. The first meeting between this subcommittee and APDA representatives was on March 3, 1955, in Cambridge, Mass. At this meeting preliminary design information was presented and the safety aspects of several alternative design features were discussed.

The second meeting of the ACRS subcommittee and APDA representatives was held at the Detroit Edison offices April 20, 1955. A representative of the newly formed Reactor Hazards Evaluation Staff of the AEC was present at this meeting. At this meeting APDA made presentations on various details of the proposed powerplant.

On June 30, 1955, an informal presentation regarding the proposed APDA fast reactor was made to the full ACRS.

A meeting was held in New York City on February 3, 1956, between some of the members of the AEC staff, ACRS subcommittee, APDA personnel, and representatives of Nuclear Development Associates, to discuss the design status of the PRDC reactor. In particular, there was a discussion on some recent physics calculations made by NDA for PRDC on the temperature, power, and bowing coefficients associated with the PRDC reactor. Also discussed was a possible increase in the number of subassemblies utilized in the PRDC reactor core. The significant point brought out of that meeting was that the recomputed temperature coefficients were somewhat smaller in magnitude than those previously used. On the basis of these calculations, the inherent stability against accidental reactivity excursions would be considerably less than had been previously assumed.

A representative of the Power Reactor Development Co. met with the technical staff of the Division of Civilian Application and the

Executive Secretary of the ACRS on February 24, 1956, to discuss the status of the Lagoona Beach site approval. At this meeting, additional information was requested on meteorology, hydrology, and seismology. This information was submitted shortly thereafter in Report APDA–114.

On March 20, 1956, an ACRS subcommittee meeting was held in Detroit, Mich. The purpose of this meeting was to bring the subcommittee up to date on the APDA hazards studies, maximum accident calculations by NDA and Dr. Bethe, relevant information from EBR–I experience, and the program of environmental hazards studies planned by PRDC.

APDA and PRDC presented their proposed fast breeder reactor to the full ACRS on June 3, 1956, at Chicago, Ill. A copy of the June 6, 1956, ACRS letter to the General Manager containing the ACRS recommendations resulting from this meeting is attached.

In addition to the foregoing meetings the Commission staff reviewed the safety aspects of the proposed design and location of the reactor with representatives of the company and with members of the ACRS on various occasions between March 1955 and July 1956.

Following the receipt of the June 6, 1956, letter from the ACRS, members of the AEC staff had several discussions with some of the members of the Advisory Committee to gain a better understanding of the comments and recommendations contained in the letter.

The June 6, 1956, letter from the ACRS represents a viewpoint agreed on by all members of the ACRS. There were, however, considerable differences of opinion as to the probability of favorable resolution of the doubtful technical questions in time to assure operation of the reactor on schedule. There was no disagreement as to the identification of the principal technical issues or as to the general nature of the program required to resolve them.

Certain issues in the letter relevant to basic problems of safety are here identified and accompanied by comments of the AEC staff:

(*a*) "Even though there are no facts or calculations available to the Committee that clearly indicate that the proposed reactor is not safe for this site, the Committee believes there is insufficient information available at this time to give assurance that the PRDC reactor can be operated at this site without public hazard."

Comment.—There is complete agreement (by PRDC also) that much information relative to the basic performance of this reactor is not known, and that several specific problems relating to potentially hazardous characteristics (i. e., temperature coefficients and meltdown) now identified must be satisfactorily solved before anyone would have assurance that operation would be safe. As indicated below, there is some basis for belief that these problems of safety can be solved.

(*b*) The ACRS expressed doubt that sufficient information would be available within the PRDC time schedule to give assurance of safe operation of the PRDC reactor unless the AEC fast reactor program was amplified and accelerated. The ACRS indicated that even if the AEC program is accelerated, there may still be lacking the necessary information to be confident that operation would be safe.

Comment.—Completion of a PRDC reactor design which can be confidently accepted does depend on developments which must

be derived from the fast reactor technology program. There is some doubt whether or not these developments can be accomplished in the time schedule envisioned by PRDC.

(*c*) The ACRS indicated that much clearer information must be gained on the various components of the temperature coefficient and suggested several analytical and experimental approaches by which this might be accomplished.

Comment.—There is complete concurrence with these suggestions, and plans have been made by PRDC to carry out experimental programs along the lines outlined by the ACRS though, as finally found necessary, these may be more extensive and may differ somewhat from those suggested by the ACRS.

(*d*) The ACRS, as a whole, was not convinced that all the possibilities for accidents which could breach the container had been eliminated and suggested "a more extensive theoretical and experimental program to examine all the possibilities."

Comment.—It is agreed by all that experimental and theoretical studies on the meltdown problem and on the maximum credible accident which could result therefrom should be continued. The AEC staff does not believe it likely that such studies will remove all possibilities of meltdown, or that design features can remove all probability of a secondary critical accumulation if meltdown does occur. On the other hand, from present judgment of what would be the most unfavorable conditions which could accompany such meltdown, the most violent accident resulting therefrom would not exceed that estimated by H. A. Bethe and J. H. Tait. They have estimated that when the core of a fast reactor collapses, with a disappearance of voids and an increase in density as if the top followed by its uranium blanket moved downward at the acceleration of free gravitational fall, the resulting explosion is on the order of 200 kilograms of TNT. Preliminary studies indicate that an explosion of 270 kilograms of TNT would not breach the proposed containment vessel providing the design includes protection against missile and fragmentation damage. Hence, it appears likely that the maximum credible accident in this reactor can be containable.

(*e*) Discussions with members of the Committee brought out that numerous gaps in knowledge relating to characteristics and performance to be expected of the reactor are likely to be encountered, not only in completing the detailed design of the reactor but also when the reactor is put in operation. The fear of some members of the Committee is that gaps which show up only when the reactor is put in operation may involve unpleasant surprises which would affect the safety of the plant. It appears to be the position of this group that such surprises can be avoided only if considerable operating experience on fast reactors is available before the PRDC design is finalized. The other viewpoint is that surprises of sufficient magnitude to make the reactor unsafe even with containment have negligible probabilities.

Comment.—The staff accepted the opinion that the gaps in knowledge which are discovered in the course of design can be corrected by design changes, and that those gaps in knowledge which are encountered only when the reactor is put into operation have negligible probability of making the reactor unsafe with

containment. The staff recognized that solutions to all the safety problems might not be found within the time schedules now contemplated by PRDC.

There was general agreement among the Committee members on what the major issues presently are, namely, the temperature coefficient and the melt-down problem, but there were differences as to their confidence that these issues could be successfully resolved within the PRDC time schedule. In particular the optimistic viewpoint is, that if the origin of the positive component of the temperature coefficient in EBR–I is clearly established and found to be correctible by design, then there is reasonable assurance that this reactor can eventually be operated without the need of a prototype and without risking public safety. This position is based on the belief that a maximum credible accident will be found containable, though much further study of this problem is considered necessary.

On the other hand the conservative viewpoint is that conditions may occur, even though at the present they cannot be visualized, which may result in a noncontainable accident. It was agreed that the meltdown problem and consequent maximum accident could not be settled by large-scale transient experiments on actual reactors. Thus additional assurance that the meltdown risk is acceptable, from the conservative viewpoint, could come only from the additional confidence in stability of operation which experience with a prototype or intermediate-scale fast reactor experiment would provide.

STAFF CONCLUSIONS

Technical features relative to safety. The prompt neutron lifetime provides the principal nuclear difference (10^{-7} sec vs. 10^{-4} sec) between the transient behavior of fast and thermal reactors. That is, if reactivity is added in excess of prompt critical (i. e., in excess of the delayed neutron fraction) in a fast reactor the neutron density, and hence the power, will increase extremely rapidly. In this case the power excursion may result in fuel melting even though self limiting features may exist in the reactor. To avoid this situation an attempt will be made by PRDC to operate within the reactivity region controlled by delayed neutrons. Within this region, operation is essentially no different from that of a thermal reactor.

Operating with the small amount of excess reactivity which this restriction requires is possible because of the four following characteristics of the PRDC fast reactor:

(*a*) The poison effect of fission products is small due to the low neutron cross sections associated with the PRDC energy spectrum.

(*b*) The burnup of U–235 is partially compensated by the production of fissionable Pu.

(*c*) The buildup of fission products is limited by frequently changing the fuel.

(*d*) The temperature override requirement on reactivity is minimized by procedures and devices which insure safety rods cannot be withdrawn until the core sodium is preheated by induction to 350° C., which is near the average operating temperature.

Of great concern in a reactor of this type from the standpoint of potential hazards are the fuel element loading and unloading mechanism and procedures. It is very important to have a fuel handling

mechanism sufficiently reliable to guard against the possibility of an overloading error. The loading mechanism for the PRDC reactor has a slow and mechanically limited insertion rate. The loading mechanism grips the fuel subassemblies with a specially designed gripping device. This device cannot release elements until they are both fully inserted in the core as determined by a position sensor, and actually seated in the lower support plate as is determined by resistance to further insertion. A fast backup is provided for quick subassembly withdrawal should any unusual behavior result.

Because of the large amount of unmoderated fuel in a fast reactor, there always exists the fear of the so-called moderator accident. In particular, should the sodium be replaced by moderator the core would become thermalized and many critical masses would result; hence a catastrophic increase in reactivity could result.

For protection against such a condition PRDC has imposed strict limitations on the amount of such materials which will be required in the plant in the form of oils and greases. No oil is allowed as a shield material and water is completely excluded from the reactor building. The steam generator is affiliated with that portion of the secondary sodium loop located outside the building.

There has been some concern expressed on the moderator effects of pieces of building materials (e. g., steel and concrete) which might be thrown into the core following an accident producing flying fragments of the building structure. However, the probability of such an occurrence is extremely remote.

One of the primary uncertainties existing in the PRDC reactor is concerned with its ability to stabilize itself in the event of a sudden increase in reactivity. In particular, for the reactor to be inherently stable it should posses a sufficiently strong negative component of the prompt temperature coefficient (the prompt negative change in reactivity per degree temperature rise) not only to override any existing positive temperature coefficient but also to provide considerable stability against reactivity excursions. The temperature coefficient has components due to compositional and dimensional changes, broadening of the neutron cross section resonances (Doppler coefficients), and distortion of the core (bowing coefficient).

The magnitude and sign of the latter two components (Doppler and bowing) provide the most uncertainty since very few data are available to confirm the present theoretical evaluations. Furthermore, a relatively large positive component of the temperature coefficient exhibited by EBR–I is not clearly understood, although a plausible explanation has been given.

The Doppler effect involves a change in rate of capture or fission as a result of temperature variations causing differences in the relative energy of nuclei and neutrons in a reactor fuel. In fast reactors it has been predicted theoretically and verified experimentally that U–235 by itself has a positive component of temperature coefficient of reactivity due to increased fission probability following a temperature increase. However, U–238 causes a negative effect due to an increase in the probability of nonfission capture following a temperature increase. Theoretical analyses have been made to determine the ratio of U–238/U–235 necessary to result in zero net reactivity change due to Doppler effects.

This analysis requires explicit information on the height and spacing of the neutron cross section resonances in U–238 and U–235. For the

purpose of this analysis these parameters were estimated on the basis of low energy data since no data are available for the energies of interest. It was found that a ratio of U–238 to U–235 equal to about 2 results in zero net reactivity change due to Doppler effects. Since the reactor of concern has a U–238/U–235 ration of 2.7 it is predicted from theory that the net effect due to Doppler will be negative but probably so small as to be of no significance.

Because of the characteristically small size of a fast reactor it is very sensitive from the reactivity standpoint to small changes in geometry. The core geometry and temperature distribution existing in the PRDC reactor provide a possibility of inward bowing of the fuel subassemblies due to nonuniform expansion within the subassemblies. Consequently if a sudden power increase were to occur fuel could, depending on the method of restraining the subassemblies, be effectively moved toward the center of the core with consequent increase in reactivity. It is believed that such an effect could result in a positive contribution to the temperature coefficient much greater in magnitude than the Doppler effect discussed previously, even if highly enriched fuel is used as in EBR–1. In fact, many believe that bowing was the principal source of the positive temperature coefficient which has been observed in EBR–1 under certain conditions of reduced coolant flow with two different cores since startup in 1952 and which was being studied in the transient experiment of November 29, 1955.

It should be noted that if the magnitude of the bowing effect is indeed identified as the source of a positive coefficient it should be possible to design the core so that any increase in temperature would cause a net outward displacement of the elements thus resulting in a negative component of the temperature coefficient. Obviously a core designed to prevent bowing in any direction, i. e., a rigid core, would also eliminate this problem. PRDC is developing plans for core structures in which this effect will be avoided or utilized to advantage.

The consequences of the so-called meltdown accident provides the greatest uncertainty in the PRDC reactor. Specifically, the meltdown accident in this case refers to a situation wherein, for any reason, a portion of the fuel melts and the resulting molten fuel rapidly rearranges itself into a supercritical mass causing an excursion of much more violence than the incident producing the meltdown. If sufficiently rapid accumulation should occur, an explosion capable of rupturing the vapor container would result.

PRDC believes, first, that no series of events causing complete meltdown could possibly occur and, second, that no credible conditions resulting in a noncontainable explosion could occur even if the unlikely possibility of melt down should be realized. In considering the problem of maximum accidents in the reactor, 3 situations have been postulated which would definitely result in noncontainable explosions, on the order of 5 tons of TNT. Even the most pessimistic are inclined to agree with PRDC that these situations are not realistic:

> (*a*) Rapid core compression (implosion of blanket on core)—caused by a total loss of collant, return of coolant to the blanket at the opportune moment of incipient melting to cause inward compression of the total structure (core surrounded by blanket) as a sphere whose radius decreases at the rate of 15′/sec. The maximum reactivity insertion rate for this case was calculated to be about $1,250/sec.

(*b*) Total melt down—in which the molten core poured through the bottom of the core structure and enclosing pressure vessel, assumed to have been melted or otherwise removed previously, into a coherent accumulation on the surface of the fast-neutron graphite shield below. Reactivity increase in this case would be $1,100/sec.

(*c*) The moderator accident—in which a sharp front of hydrogenous material is introduced via the coolant system, at the normal rate of coolant flow. The reactivity rate in this case would be $1,200/sec.

The maximum credible accident, i. e., one having most violent consequences considered extremely unlikely to occur, but one conceded to be remotely possible, results from melt down and collapse of the core, with disappearance of the void and increase in density as if the top surface moved downward with free gravitational fall (i. e., core compression in one dimension only). In this case (as calculated by Bethe & Tait) reactivity is added at the maximum rate of $50/sec., and the resulting explosion is on the order of that from 200 kilograms of TNT. PRDC believes that energy releases in this range would be containable. There appears to be almost complete concurrence in the viewpoint that accidents resulting in reactivity changes above $1,000/sec., are not credible in this reactor (assuming that the problem of large prompt positive coefficient exhibited by EBR–1 is solved). It is clear on the other hand that the possibility must be conceded that accidents resulting in as much as $50/sec. reactivity additions, with consequent explosions on the order of 200 kilograms of TNT, may occur, and designs must be made to contain explosions of this magnitude. Whether or not this really represents the maximum credible accident is not yet clear. The prevalence of opinion seems to be in agreement with PRDC's view that situations resulting in greater accidents cannot occur. However, this problem, particularly with reference to accidents in the range between $50/sec. and $1,000/sec., must be studied further.

Numerous gaps in knowledge relating to characteristics and performance to be expected of the reactor are likely to be encountered not only in completing the detailed design of the reactor but also when the reactor is put in operation. It is recognized that many of these deficiencies in knowledge might involve safety aspects.

It is believed that the gaps in knowledge which are discovered in the course of design can be corrected by design changes and that those gaps in knowledge which are encountered only when the reactor is put into operation have negligible probability of making the reactor unsafe with containment. It is recognized that solutions to all the safety problems may not be found, however, within the time schedules now contemplated by PRDC.

Proposed program of PRDC to resolve hazard problems in establishing reasonable assurance on the safety of their reactor.—PRDC has outlined a program of study to be conducted by it and AEC which should greatly clarify the degree of hazards involved and means of minimizing these before operation of the reactor is undertaken. Included in this program are:

(*a*) *Study of new EBR–1 core with rigid fuel elements.*—AEC plans an extensive program of experimentation of the EBR–1 reactor. Studies will include operation with a single rigid core

in which bowing of the fuel elements cannot occur. Further theoretical and analytical work on the observed behavior will also be done. PRDC is confident that bowing of the core elements will be established as the cause of the large positive temperature coefficient in EBR–1, and that this can be controlled by design in the PRDC reactor.

Comment.—There is general belief that the experiments on the redesigned EBR–1 core together with more theoretical interpretations on the existing EBR–1 data will show the positive temperature coefficient observed in EBR–1 was due to geometrical distortion of the subassemblies (if bowing is the source of the instability, its effect can be controlled by suitable design).

(*b*) *Simulator and oscillator studies for clarification of transient behavior of the reactor.*—PRDC has outlined a program of study involving use of the best current value of temperature coefficients, time constants, etc., of its reactor in order to predict the transient behavior to be expected. Later, in the initial low-power stages of operation, PRDC proposes to do oscillator experiments on the reactor from which observed behavior can be compared with that predicted and more exact values of coefficients and constants can be obtained for use in the simulator to furnish more dependable knowledge of the reactor's transient characteristics at higher power level.

Comment.—These tests should be extremely valuable in anticipating the operating behavior of this reactor.

(*c*) *Doppler effect on reactivity.*—PRDC points out that the work already done on ZPR–3 indicates that this effect is no larger than the small value predicted theoretically. Refinements in instrumentation on the ZPR–3 should soon yield more definitive results. Included in the proposed PRDC critical assembly measurements will be an experiment designed to determine the magnitude of the Doppler effect on reactivity for the composition and geometry of the PRDC reactor.

Comment.—Indications are good that any positive reactivity contribution of Doppler effect in U–235 will be canceled by an opposite effect from the U–238 in the PRDC core. However, since this effect is not yet completely understood, experiments as proposed should be continued to confirm the favorable theoretical and preliminary experimental results now available.

(*d*) *Studies on course and magnitude of melt-down accidents together with methods of coping with this situation if it occurs.*—A melt-down study program has been formulated by PRDC to permit, prior to final design and operation of the reactor, more accurate predictions on the probability of a melt-down accident. This program will consist of both experimental and theoretical investigations of the possible causes and results of accidents which might result from melt down. The experimental investigation will involve, as PRDC describes it, experiments that are designed to obtain basic design information on the fuel pins and support structure, as well as to demonstrate that any conceivable melt-down pattern is manageable. The experiments anticipated are:

(1) Single pin test in absence of sodium.
(2) Subassembly test in absence of sodium.

(3) Melt down section tests in absence of sodium.
(4) Miscellaneous melt-down test in absence of sodium.
(5) Miscellaneous tests to be run with sodium present.

The theoretical analysis planned will be of two types which seek to understand better the mechanics and the neutronics, respectively, of the problem. In particular, these investigations will involve theoretical models of melt downs and energy release calculations. An effort will be made to actually predict the space-time behavior of the melting core for various conditions of melt down. PRDC confidently expects that the energy-release calculations will show that a melt down will not result in an uncontainable accident.

Provisions are being made in the design of the reactor vessel to prevent criticality should a melt down occur. For example, the radial dimensions of the plenum are sufficiently large for the thick metal, horizontal bottom of the air chamber to have a diameter of about 7 feet. This provides a region where the entire molten core could be contained in a safe subcritical geometry providing the contents were distributed uniformly across this horizontal plane.

Comment.—The studies proposed are good but should be extended as necessary.

(e) A basic opinion in the PRDC reactor program holds that the proposed reactor can be tested safely at low power levels at the Lagoona Beach site to demonstrate whether it is or is not a safe reactor for subsequent high power operation. PRDC believes that even if the tests show that design changes are necessary to insure a safe and stable system, the tests required to demonstrate this point can be conducted in a manner that assures adequate protection to the public. This program is designed to detect the unexpected. The initial tests are to be conducted at lower power and during favorable meteorological conditions. It is anticipated by PRDC that a major portion of the reactor characteristics will have been determined before the fission product activity exceeds about 5 percent of the activity which will be present after extended operation at full power.

Comment.—Opinions differ on whether or not there is likely to be sufficient information for developing a safe startup program at the time the reactor is ready to operate, for it is generally agreed that unknowns or "surprises" may be encountered during startup and low power tests of performance characteristics. A great deal of the present uncertainty is because it is not clear now whether or not there will exist at the time PRDC is ready to operate any prior operating experience on a fast reactor of similar or intermediate scale. Hence, the degree of confidence with which operation of PRDC can be predicted at that time cannot be predicted now.

Dependence of the PRDC reactor on the AEC fast reactor program.—It is clear from the foregoing sections that present information on fast reactors is inadequate to permit a design of the PRDC reactor in which certain confidence can be placed that it possesses ultimate safety. The PRDC reactor design must depend heavily on such AEC programs as the further exploration of EBR–1 behavior, both experimental and theoretical; on ZPR–III experiments and on the general progress of fast reactor technology.

Quite beyond this, however, even if satisfactory progress is assumed in vigorous pursuit of these programs, there will still remain an area of uncertainty; namely, the actual operating performance of a fast reactor similar to the one proposed. EBR–1 is very different from PRDC, and therefore experience on EBR–1 is of significance for PRDC only if accompanied by very careful theoretical interpretation. The scale-up involved in the PRDC reactor is thus one of unprecedented magnitude. Although far from identical with PRDC, both EBR–II and Dounreay are much more like it than EBR–1. Thus, even though these reactors are not prototypes in the strict sense, both design and operating experience on them will have great relevance to PRDC. It is important, therefore, that EBR–II be pushed with utmost speed. It is also important that close liaison be maintained between PRDC and any other fast reactor program which might have relevance to the proposed reactor design.

Optimism in the ultimate solution of the problems of safety in the PRDC reactor is based on the confidence that the Commission's programs, including experience with an intermediate scale fast reactor experiment, will go forward. (If features such as thin tube fuel elements, method of control, and power densities comparable to those in the PRDC reactor are included, the experience would have optimum usefulness.) All concerned will feel more confident if actual operating experience on such a reactor (of at least 6 months) can be obtained prior to operation of the PRDC reactor.

Summary of hazards evaluation.—The conclusions relative to the safety of this reactor are inevitably influenced by the lack of experience with reactors of this general type. It is true that EBR–1 has provided some information on the operation of fast-heterogeneous sodium-cooled reactors, but the experience directly applicable to the design of a full scale power reactor is limited. Analysis has been made of all information and expert opinion relative to the proposed reactor, and it is possible to identify the principal unresolved areas of doubt.

There is a considerable difference in the views held by the experts on the degree of certainty with which the characteristics of this proposed reactor can be predicted now or established by programs now contemplated. For example, it is generally agreed that if the temperature coefficient and melt-down problems are resolved there is reasonable assurance that the reactor could be operated without undue risk to the health and safety of the public. However, opinions differ widely as to confidence that these two problems can be satisfactorily resolved in advance of scheduled operation.

The principal areas of uncertainty may be identified as follows:

(*a*) Experience has established the existence in the EBR–1 of a short or intermediate period positive temperature coefficient, the source of which remains at present unidentified. It is suspected that dimensional distortion of the core structure may have caused this positive temperature coefficient in the EBR–1. It is expected that further experimental and theoretical investigations will identify the cause of this behavior. If the cause can be identified, and if the design of the PRDC core can be made to eliminate the positive coefficient, one of the greatest single uncertainties in the operational characteristics of this reactor will have been removed. Unless this can be done, a definite risk to the public of unknown magnitude would accompany operation of the proposed reactor at

the designated location. One of the early and obvious safety problems which must be solved, therefore, is a satisfactory identification of the source of the positive temperature coefficient observed in EBR–1. The design of the PRDC core must eliminate or advantageously utilize this effect.

(*b*) The amount of U–235 distributed in the core of this reactor is on the order of 5 critical masses of unreflected U–235 metal, and more than 15 critical masses of U–235 when each of the 5 critical masses is surrounded by natural uranium such as is in the reactor blanket. It is not impossible, therefore, that any malfunctioning of the reactor, e. g., unanticipated nuclear excursion, or less or gross disturbance of coolant functioning, would cause melting of the core, could result in local accumulations of U–235 of critical dimensions within the core structure. The inherrent arrangement of the core and the many design features incorporated to prevent occurrence of meltdown obviously reduce the probability of such an incident to a low level. It cannot be concluded, however, that the possibility has been, or can be, entirely eliminated. Therefore, the possibility of meltdown, with some finite consequent possibility of a local critical accumulation within the structure must be reckoned with. Since these possibilities must be assumed, the question of safety then depends on the consequences of such an occurrence. This, in turn, depends primarily on the rate at which a critical accumulation could form. It is concluded that there is a possibility that accidents resulting in as much as $50/sec reactivity additions, with consequent explosions on the order of 200 kg of TNT, may occur, and designs must be made to contain explosions of this magnitude. Such an explosion, of course, would wreck the reactor structure. but containment can be provided which would not be breached. Whether or not this really represents the maximum credible accident is not yet clear. The prevalence of opinion seems to be in agreement with PRDC's views that situations resulting in greater accidents are not credible. This problem, particularly with reference to accidents in the range between $50/sec and $1,000/sec, must be studied further.

(*c*) The evidence available indicates that the net temperature coefficient due to the Doppler effect in the materials of the reactor structure would be negative. Information for all of the materials, however, is not known; particularly for the plutonium which will be produced. Studies of this problem should be continued, but present information indicates the effects in any case will be small.

(*d*) Several crucial unresolved problems of safety in fast reactors (i. e., temperature coefficient and meltdown) are now recognized and others of less serious nature may likely be encountered before final design of the PRDC reactor is completed. The satisfactory solution of these problems must in large part be accomplished by such projects as EBR–I, EBR–II, Dounreay, and the Commission's fast reactor program. Hence, progress in these programs is essential to satisfactory completion of the PRDC reactor design.

Taking all available facts and opinions into account, the staff concluded with regard to the hazard aspects of the PRDC reactor that:

(1) The source of the positive component to the temperature

coefficient exhibited by EBR–I must be identified and its effect eliminated in the PRDC reactor before approval to operate the latter can be given. There is a very high probability that the observed positive coefficient in the EBR–I is due to bowing of the fuel elements and that the planned experimentation with EBR–I and ZPR–3 will demonstrate acceptable temperature coefficients.

(2) A possibility of melt-down of the reactor core, with consequent U–235 accumulation of critical dimensions, cannot be eliminated. It appears now, however, that the violence of any explosion resulting therefrom would not exceed that from the order of 200 kilograms of TNT which can be contained and hence would not constitute unreasonable risk to the general public. However, further investigation must be carried out to insure that explosions of this magnitude do in fact represent the maximum credible accident.

(3) There exist a number of areas of uncertainty in the detailed behavior of the reactor and other such areas are likely to be discovered. So far as can be judged at this time, however, it should be possible to resolve these in such a way as to avoid undue risk to the public.

(4) Many features of the reactor facility have not been completely designed, nor evaluated from the standpoint of safety. None of these appears at the present time, however, to involve hazards which cannot be eliminated satisfactorily in due course.

(5) The likelihood of an acceptable design for this reactor being completed depends heavily on the concomitant forward progress of the general fast reactor program of theoretical and experimental research and development.

COMMISSION ACTION

After consideration of the staff conclusions and other factors identified above, the Commission:

Determined that—

(1) The PRDC reactor will be a utilization facility as defined in the Commission's regulations contained in title 10, chapter 1, CFR, Part 50: Licensing of Production and Utilization Facilities;

(2) The reactor will be a utilization facility involved in the conduct of research and development activities leading to the demonstration of the practical value of that type of reactor for industrial or commercial purposes;

(3) PRDC, Atomic Power Development Associates, Commonwealth Associates, Inc., and United Engineers & Constructors, Inc., are technically qualified to design and construct the reactor;

(4) The quantities of special nuclear material estimated to be required and the estimated schedule of receipts and returns are reasonable;

(5) (*a*) There are identified areas of uncertainty regarding the hazards potential of fast neutron breeder reactors that must be investigated and resolved. From the current state of the technology applicable to such reactors it can reasonably be inferred that there may be other areas of uncertainty not yet identified and requiring investigation and resolution.

Of primary importance among the identified areas of uncertainty are:

(1) Whether there exists in the PRDC reactor a positive component of the temperature coefficient similar to that exhibited in the Commission's experimental breeder reactor (EBR–I). The source of the positive component of the temperature coefficient exhibited by EBR–I (presently believed to be caused by dimensional distortion of the core structure) must be identified and its effect, if any, in the PRDC reactor must be eliminated.

(2) Whether there is a credible condition of meltdown and reassembly of the fuel of the PRDC reactor which could result in an explosion that would breach the gastight building surrounding the reactor. Further investigations must be carried out to establish that a credible condition of meltdown with consequent U–235 accumulation of critical dimensions cannot result in such an explosion.

(*b*) On the basis of information presently available, the Commission believes that the problems relating to the safety of operation of the PRDC reactor will prove to be of a kind that can be satisfactorily resolved within a reasonable time. There is some doubt whether they can be resolved in time to meet the schedule proposed by PRDC in its application and it may turn out that further investigations beyond the program of investigation outlined by PRDC in its application will be needed.

Following this action a conditional construction permit, incorporating an allocation of 3,929 kilograms of U–235, was issued on August 4, 1956. This permit was transmitted to PRDC by a letter of the same date from the Director, Division of Civilian Application, a copy of which is attached.

B. REPORT ON THE CONSIDERATION LEADING TO THE ISSUANCE OF A CONSTRUCTION PERMIT AND THE ALLOCATION OF SPECIAL NUCLEAR MATERIAL TO THE CONSOLIDATED EDISON COMPANY OF NEW YORK

The Consolidated Edison Company of New York, Inc., submitted on March 22, 1955, an application to the AEC for licenses to construct and operate a pressurized water thorium-uranium converter reactor capable of producing 500 microwatts of thermal energy. The project described by the application consists of a steam-electric generating station of 250,000 kilowatts capacity. The nuclear reactor will furnish energy equivalent to about 140,000 kilowatts of electricity and an oil-fired superheater, raising the steam to about 1,000° F., will supply the additional energy. The company stated that the characteristics of the proposed reactor are reasonably calculated to constitute an advance in the application of atomic energy for commercial purposes and to lead to a demonstration of the practical value of such reactor (with due allowance for improvements in design resulting from the process of construction and the experience of operation) for commercial purposes. The total cost is estimated at $55 million.

The company stated that the reactor will be constructed and operated for the production of steam and special nuclear material (U–233). The steam will be used to generate electricity for the company's own electric operations and the uranium 233 will either be sold to the AEC or utilized as fuel.

The construction will be accomplished by the Babcock & Wilcox Co. The Vitro Corporation of America will furnish consultation advice.

On July 28, 1955, the company amended its original license application to read as follows:

"On the basis of presently available knowledge and on the assumption that a construction permit will be issued to applicant on or about January 1, 1956, the earliest estimated completion date for the reactor is December 1, 1959, and the latest estimated completion date is December 1, 1960. As used herein, the phrase 'completion date' means the date on which a sustained nuclear chain reaction first occurs in the proposed reactor."

The application includes the following additional data:

(*a*) Description of applicant's business.

(*b*) Certified copies of resolutions of the company's board of trustees authorizing the construction of the facility and submission of license applications to the AEC.

(*c*) Copy of a certificate executed by the assistant secretary of the company certifying as to the existence of an executed contract between the company and the Babcock & Wilcox Co., providing for the furnishing, delivery and erection of the proposed nuclear reactor with associated steam equipment.

(*d*) Copies of an exchange of letters between the company had the Vitro Corporation of America evidencing an agreement for the provision of consultative advice by Vitro.

(*e*) As evidence of the financial resources and responsibilities of the company, certified copies of its balance sheet as of December 31, 1954, and of a consolidated income statement for the calendar years 1950, 1951, 1953, and 1954.

(*f*) A compilation of biographical sketches of the board of trustees of the company as constituted on March 1, 1955.

(*g*) Narrative and graphic descriptions of the proposed electric generating plant in relationship to the nuclear steam generator.

(*h*) Maps and photographs describing the topography of the site and its relationship to the surrounding territory.

(*i*) Application amendment No. 1, dated July 28, 1955, changing the schedules of source and special nuclear materials required, to be consumed, and transferred (this schedule was subsequently altered by application amendment No. 3) and changing the construction schedule.

(*j*) Application amendment No. 2, dated November 18, 1955, incorporating section No. 1 (Preliminary Safety Analysis) of the hazards summary report.

(*k*) Application amendment No. 3, dated December 16, 1955, incorporating section No. 2 (Containment and Waste Disposal), and section No. 3 (Instrumentation and Control) of the hazards summary report; incorporating revised descriptive data relating to the proposed facility; incorporating a revised schedule of source and special nuclear material requirements, consumption, and transfers; incorporating revised site data; and stating the applicant's intention to perform or have performed various research tests, critical experiments, and MTR experiments prior to the completion of construction.

The company requested the following specific AEC licenses and commitments:

"(1) That the Commission grant the Applicant a single license for a period of forty (40) years, as authorized by Section 161 (h) of the Act, covering the following activities:

"(a) The manufacture and production (by contract as hereinabove set forth) and the acquisition, possession and operation of a reactor as hereinabove described, as both a utilization facility and a production facility, in accordance with Section 104b of the Act, with a proviso that if the Commission subsequently makes a finding pursuant to Section 102 of the Act applicable to the reactor type here involved, the reactor constructed hereunder may continue to be operated pursuant to said Section 104b for the period of any license hereunder and any renewal or renewals thereof.

"(b) The possession and use of special nuclear material, in connection with the construction and operation of the proposed reactor, as authorized by Section 53 (a) (2) of the Act.

"(c) The possession and use of source material in connection with the construction and operation of the proposed reactor, as authorized by Section 63 (a) (2) of the Act.

"(2) That the Commission issue to Applicant a construction permit, with reasonable allowance for flexibility, in accordance with the schedule hereinabove set forth.

"(3) That the Commission agree to distribute to Applicant a supply, as hereinabove specified, of source material and special nuclear material for the operation of said reactor for the period of the license; and that the Commission also agree to furnish, for a like period, the services of transporting (from the reactor site) and processing special nuclear material produced by said reactor and other byproduct or waste material remaining from the operation of said reactor.

"(4) That the Commission make available to Applicant information developed under Commission sponsorship and pertinent to the construction and operation of said reactor."

Financial qualifications.—Based on a review of the financial statements submitted by Consolidated Edison and of data from other sources it was concluded by the staff that the applicant was financially qualified to engage in the proposed activity and to assume responsibility for the payment of AEC charges for the use, consumption or loss of special nuclear material.

Technical promise.—The staff concluded that the construction and operation of the proposed reactor will contribute materially to the demonstration of practical value of the pressurized water-type reactor, that the basic concept is sound, and that the applicant had obtained highly competent assistance.

Special nuclear material requirements.—The special nuclear material required as fuel for the reactor is uranium enriched to over 90 percent in the isotope U–235. Based on the applicant's estimates of requirements, the AEC staff calculated that the total quantity of special nuclear material to be shipped by AEC to Consolidated Edison's fuel fabricator would be 11,765 kilograms of contained U–235; that the total quantity of fabrication scrap to be recovered and returned to AEC would be 1,531 kilograms of contained U–235; that the total quantity of spent fuel to be recovered and returned to AEC would be 4,535 kilograms of contained U–235; and that the maximum quantity of material outstanding at any one time (burn-up, losses, and inventory) would be 5,699 kilograms of contained U–235.

The AEC staff reviewed the detailed Consolidated Edison special nuclear material requirements and concluded that the quantities are reasonable for a reactor of this concept and power level. The Commission staff also concluded that such distribution of the special nuclear material would not cause the quantity of U–235 determined by the President to be available for distribution to licensees pursuant to section 53 of the act to be exceeded, assuming that the scheduled returns will be processed on a current basis to a usable state.

Miscellaneous special considerations.—The Consolidated Edison Co. requested in its license application that the AEC "agree to distribute to applicant, a supply, as hereinabove specified, of source material and special nuclear material for the operation of said reactor for the period of the license; and that the Commission agree to furnish, for a like period, the services of transporting (from the reactor site) and processing special nuclear material produced by said reactor and other byproduct or waste material remaining from the operation of said reactor."

It was felt that Consolidated Edison may need a supply of thorium metal from AEC for the proposed reactor for a limited period. Several firms were believed to be evaluating the potential market and to be making tentative plans for production. In transmitting the construction permit to Consolidated Edison, the Director of Civilian Application informed the company that the issuance of the permit did not constitute a commitment by AEC to supply thorium metal, but that, pursuant to established AEC policy, the AEC will undertake to supply Consolidated's thorium metal requirements, under appropriate terms and conditions and within the limitations of available supply, until such time as thorium metal is available from a commercial source of supply.

Consolidated was also informed that AEC is not committing itself to supply the special nuclear material in any form except UF_6, and that, while commercial facilities are not now available for preparing oxide or metal from highly enriched UF_6, it is expected that such facilities will become available.

Similarly, it was anticipated that private firms will become engaged in the business of transporting and processing special nuclear and byproduct materials. Therefore, the company was informed that the issuance of the construction permit does not constitute a commitment on the part of the AEC with respect to these services.

SAFETY CONSIDERATIONS

Review of possible hazards associated with the proposed Consolidated Edison reactor began shortly after filing of the license application. From time to time during the period of review the applicant submitted additional information covering the reactor site, reactor design, containment, waste disposal, instrumentation and control, and planned developmental and test work.

Site.—The reactor is to be located at Indian Point on the Hudson River about 24 miles north of New York City and 2 miles southwest of Peekskill, N. Y. It appeared from the application that there are approximately 45,000 inhabitants within a 5-mile radius around the site and about half of these inhabitants live in Peekskill; that there are no residences or industrial plants within a one-quarter mile radius

of the proposed plant; and that within a half-mile radius there are no industrial plants and 16 one-family residences.

Reactor design.—The nuclear core of this reactor, as described by the applicant, represents a new design concept. It consists of 120 fuel bundles each containing alternate plates of thorium and a U–235 zircalloy matrix. The maximum excess reactivity loaded into the reactor will be 20–25 percent and corresponds to an initial loading of 275 kilograms of U–235 and 8,100 kilograms of thorium. There are 20 control rods with a calculated worth of 40 percent excess reactivity.

The water coolant system is designed to operate at a pressure of 1,500 psia and a maxim temperature of about 480° F. There are 4 primary coolant loops each containing 1 boiler and 2 centrifugal-type pumps. Each pump has a capacity of 15,000 gpm. The primary pressure vessel is to be fabricated in accordance with the ASME Power Boiler Code for a design pressure of 1,800 psia and a design temperature of 650° F.

The control instrumentation is designed to scram the reactor for periods less than 10 seconds and power levels in excess of 120 percent of normal operating level. It consists of—

(*a*) Two startup and period trip channels for the power range source power to 0.5 watts.

(*b*) Two startup and period trip channels for the power range 5×10^{-3} to 500 watts.

(*c*) Three logarithmic and period channels in the power range 5×10^{-3} watts to full power (500 MW).

(*d*) Three linear power and safety channels in the power range 5 MW to 600 MW.

The use of thorium as a fertile material is an important factor in considering the hazards of operation of this reactor. As U–233 is produced by neutron capture in the thorium, the mean prompt neutron lifetime of the core is reduced due to the lower delayed neutron fraction resulting from U–233 fission as compared to U–235. Consequently, as U–233 is produced, the reactor is much more sensitive to parameters such as temperature, void and Doppler coefficients, which affect the reactivity. The values for these parameters were calculated by the applicant and appeared to be favorable.

Containment.—The Consolidated Edison Co. has outlined the general design of the containment for this reactor but has not presented detailed design specifications. It will consist of a cylindrical steel shell connected by ducts to 2 spherical steel shells approximately 70 feet in diameter. The cylindrical shell contains the reactor pressure vessel immersed in water. The spherical shells contain the circulating pumps, steam, generating equipment and emergency spray coolant tanks.

The maximum credible accident, as envisioned by Consolidated Edison, would be the complete rupture of a primary coolant loop pipe 24 inches in diameter. If this should occur, the peak pressure in the containment vessel would be about 100 pounds per square inch, according to the applicant's calculations. This peak pressure was based entirely on the energy contained in the primary coolant sytem. A nuclear excursion or penetration of the containment by missiles was not considered by the applicant to be credible. The applicant assumed that metal-water reactions would take place slowly.

In January 1956, AEC asked Consolidated Edison Co. to reconsider the maximum credible accident in the light of available information on

metal-water reactions and the possibility of forming a secondary critical mass due to selective meltdown of the U–235 fuel elements.

The general design concept for containment was considered acceptable. Approval of the design specifications for the containment will depend on review of the results of further study on the maximum credible accident. The Commission will insist and Consolidated Edison has stated that the containment will be based upon the maximum credible accident that could occur.

Although the hazards information submitted by Consolidated Edison was considered adequate for a preliminary hazards evaluation, it was recognized that a considerable amount of developmental and design work remains to be done before a final hazards evaluation can be made. This includes work on the reactor pressure vessel, fuel elements, and experiments designed to measure the calculated nuclear parameters.

The Babcock & Wilcox Co., contractor to Consolidated Edison Co., is conducting a developmental program and has already submitted hazards information on a critical experiment facility. The initial experiments in this facility concern the Consolidated Edison reactor design

SUMMARY AND CONCLUSIONS

In a meeting in New York City on May 2, 1955, attended by Consolidated Edison, Babcock & Wilcox, Vitro, and Commission representatives, it was agreed that there had not been assembled sufficient information on which to base an evaluation of the actual or potential hazards of operating the proposed reactor at the site chosen.

On August 29 and December 1, 1955, representatives of Consolidated Edison met with a subcommittee on the ACRS to consider and discuss preliminary data compiled by the applicant dealing with the nuclear physics, containment, and waste-disposal aspects of the proposed reactor. The formal submission by the applicant of sections of its preliminary hazards report followed those meetings. By amendment No. 2, dated November 18, 1955, the applicant submitted section 1 entitled "Preliminary Safety Analysis," by amendment No. 3, dated December 16, 1955, the applicant submitted sections 2 and 3 entitled "Containment and Waste Disposal" and "Instrumentation and Control," respectively.

On January 4, 1956, the data submitted by the applicant was considered by the ACRS.

Using the information on the site in conjunction with the technical information which has been submitted on the reactor and its containment, the staff, with the advice and assistance of the Advisory Committee on Reactor Safeguards, concluded that the design approach to the reactor was sound and saw no hazards problems which appeared insoluble.

Taking all considerations into account it was concluded by the staff that there is no reason to believe that a reactor having the general characteristics and specifications indicated cannot be constructed and operated at the proposed site without undue risk to the health and safety of the public.

COMMISSION ACTION

After consideration of the staff conclusions and other factors identified above, the Commission determined that—

(1) The proposed Consolidated Edison reactor will be a utilization facility as defined in the Commission's regulations contained in title 10, chapter 1, CFR, part 50, "Licensing of Production and Utilization Facilities";

(2) Consolidated proposes to utilize the reactor in the conduct of research and development activities leading to the demonstration of the practical value of this type of reactor for industrial or commercial purposes;

(3) Consolidated is financially qualified to assume responsibility for the payment of AEC charges for the special nuclear material to be furnished by the AEC, to undertake and carry out the proposed use of the material for a reasonable period of time, and to engage in the proposed activity in accordance with the regulations in chapter 1, title 10, CFR;

(4) Consolidated Edison and the Babcock & Wilcox Co., the contractor selected by Consolidated to design and construct its reactor, are technically qualified to design and construct the reactor;

(5) Consolidated has submitted sufficient information to provide reasonable assurance that a utilization facility of the general type proposed can be constructed and operated at the proposed location without undue risk to the health and safety of the public and that additional information required to complete the application will be supplied; and

(6) The quantity of special nuclear material estimated to be required, and the estimated schedules of receipts and returns are reasonable.

Following this action a construction permit, incorporating an allocation of 5,699 kilograms of U–235, was issued on May 4, 1956. This permit was transmitted to the company by a letter of the same date from the Director, Division of Civilian Application, a copy of which is attached.

MAY 4, 1956.

Mr. H. R. SEARING,
President, Consolidated Edison Company of New York, Inc.,
New York 3, N. Y.

DEAR Mr. SEARING: Enclosed is a construction permit issued by the Atomic Energy Commission authorizing Consolidated Edison Co. to construct the utilization facility described therein.

You will observe that the final paragraph of this permit establishes an allocation of 5,699 kilograms of contained Uranium 235 for use in connection with the operation of the facility. This allocation represents the quantity of U–235 estimated to be required for burnup and losses, and assumes that at the end of the license period any remaining U–235 in the possession of Consolidated Edison Co. or its fuel element fabricator will be returned to the Commission. You will also observe that shipments of U–235 by the Commission to Consolidated in accordance with schedule 1 of the appendix to the permit will be conditioned upon Consolidated's return to the Commission of material substantially in accordance with schedule 2 of the appendix. The

issuance of this permit and the allocation of U–235 contained therein is not to be construed as a commitment by the Commission to supply the U–235 in any form except UF_6.

The issuance of the permit does not constitute a commitment on the part of the Commission with respect to providing transportation or reprocessing services in connection with materials.

The Commission's press release of January 11, 1956, which announced a basic price per kilogram for thorium metal stated that "the Commission plans to sell or lease thorium metal in limited quantities only until industry is prepared to meet commercial requirements." In view of the Commission's policy of avoiding competition with industry, we recommend that you take appropriate steps promptly to ascertain the extent to which you will be able to obtain thorium metal for the reactor from sources independent of the Commission. Several industrial companies have expressed an interest in manufacturing thorium metal. We shall appreciate being advised as promptly as possible of the extent to which you will be able to fill your requirements from independent sources, and of the extent, if any, to which you anticipate a need to obtain thorium from the Commission.

Please communicate with us in the event you have any questions concerning any of the provisions of the construction permit.

Sincerely yours,

FRANK K. PITTMAN,
Acting Director, Division of Civilian Application.

C. REPORT ON THE CONSIDERATIONS LEADING TO THE ISSUANCE OF A CONSTRUCTION PERMIT AND ALLOCATION OF SPECIAL NUCLEAR MATERIAL TO COMMONWEALTH EDISON CO.

On March 31, 1955, the Commonwealth Edison Co. submitted, on behalf of the nuclear power group (then comprised of the American Gas & Electric Service Corp., Bechtel Corp., Commonwealth Edison Co., Pacific Gas & Electric Co., and Union Electric Company of Missouri), a proposal under the power reactor demonstration program and included therein an application for license for construction of a full-scale nuclear powerplant of the boiling water reactor type developed by the Argonne National Laboratory with the duel cycle steam system developed by the General Electric Co. The plant is to have at least 180 megawatts of net electrical capacity.

The proposal stated that NPG was of the opinion that the ultimate prospects for the competitive operation of an electrical generating plant powered by some future reactor of the boiling water type are such as to warrant the construction of a full-scale electric generating plant powered by such a reactor. The total cost, exclusive of land and transmission facilities, is estimated at $45 million.

The construction is to be accomplished under a contract with the General Electric Co. Bechtel Corp. would be engineer-constructor for General Electric and would handle certain engineering and actual construction in the field.

On June 24, 1955, a new application was filed by Commonwealth Edison Co. under part 50, 10 Code of Federal Regulations requesting

a class 104 license for a period of 40 years. The application, as subsequently amended, included the following data:

(*a*) Description of applicant's business.

(*b*) Draft copy of the agreement between the parties participating in the nuclear power group.

(*c*) As evidence of the financial resources and responsibilities of the Commonwealth Edison Co., a copy of the annual report to the stockholders for the year 1954.

(*d*) Capital and operating cost information.

(*e*) Report NPG–126, Environmental Factors at Proposed Site of Dresden Generating Station of Commonwealth Edison Co.

(*f*) Amendment dated February 1, 1956, giving revised earliest and latest completion dates and revised estimate of fuel requirements for special nuclear material.

(*g*) Amendment dated March 9, 1956, providing a schedule of returns of spent fuel.

(*h*) Amendment dated March 15, 1956, revising original schedule for deliveries and returns of control rods containing special nuclear material.

The application also included classified supplements. These are Report NPG–111—Boiling and Flashing Reactor Control Station Power plant, Design Study, and Report X–GEAP–045—GE Dual Cycle Boiling Reactor, Preliminary Summary of Basic Reactor Characteristics Affecting Safety.

Construction schedule.—On February 1, 1956, the company amended its original application as follows:

"It is desired that the construction permit, to be issued under section 185 of the Atomic Energy Act of 1954, for the applicant's Dresden Station, Grundy County, Ill., set forth the dates of July 1, 1959, and December 31, 1960, as the earliest and latest dates for the completion of construction, and that the charging period for the reactor be established as March 1, 1959, to September 30, 1960."

Technical promise.—The staff concluded that the construction and operation of the proposed reactor would contribute materially to the demonstration of practical value of the boiling-water reactor; that the basic concept is sound and that the applicant has obtained highly competent assistance. The proposed reactor represents a logical extrapolition of technology under development in the BWR program.

Financial qualifications.—The company submitted a copy of its annual report to its stockholders for the year 1954 as evidence of its financial qualifications.

Based on a review of the financial data submitted by Commonwealth Edison and of data from other sources it was concluded by the staff that the applicant was financially qualified to engage in the proposed activity and to assume responsibility for the payment of AEC charges for the use, consumption, or loss of special nuclear material.

Special nuclear material requirements.—The special nuclear material required as fuel for the reactor is uranium enriched to approximately 1.5 percent in the isotope U–235. The control rods will incorporate uranium enriched to about 90 percent in isotope U–235. Based on the applicant's estimates of requirements, the AEC staff calculated that the total quantity of special nuclear material to be shipped by AEC to Commonwealth Edison's fuel element and control rod fabricator would be 16,228 kilograms of contained U–235; that the total quantity of spent fuel and control rods to be recovered and returned

to AEC would be 7,905 kilograms of contained U-235; and that the maximum quantity of material outstanding at any one time (burn-up, losses, and inventory) would be 8,323 kilograms of contained U–235.

The AEC staff reviewed the detailed Commonwealth Edison special nuclear material requirements and concluded that the quantities are reasonable for a reactor of this concept and power level. The Commission staff also concluded that such distribution of the special nuclear material would not cause the quantity of U–235 determined by the President to be available for distribution to licensees pursuant to section 53 of the act to be exceeded, assuming that the scheduled returns will be processed on a current basis to a usable state.

Miscellaneous considerations.—The Commonwealth Edison Co. requested fuel in the form of uranium oxide. It was decided that the AEC would not convert UF_6 to oxide since commercial facilities would be available for this purpose. It was believed also that commercial plant capacity would be sufficient for Commonwealth's requirements. The Commonwealth Edison Co. was informed therefore that the allocation of special nuclear material established in the construction permit did not commit the AEC to furnish such material in any form other than as UF_6.

The data submitted by Commonwealth in connection with its license application expressed Commonwealth's intention to pay 100 percent burn-up charges on the low enrichment fuel and to return the spent fuel to AEC without credit. Under this arrangement Commonwealth had requested that AEC pay for transportation of the spent fuel from the reactor site and pay for storage of the byproduct and waste material. The company was advised that it is not anticipated that the Government will bear such transportation or storage costs.

SAFETY CONSIDERATIONS

Location

The site proposed for the atomic powerplant is a plot approximately 950 acres in size located just west of the confluence of the Des Plaines, Kankakee, and Illinois Rivers in Grundy County, Ill. It is roughly 50 miles southwest of Chicago in a sparsely populated rural agricultural area. The site elevation is 516 feet above datum. An elevation of 507 feet has been recorded as the maximum flood level experienced to date. The prevailing wind direction is southwest varying in velocity from 8 to 11 miles per hour on the basis of meteorological data obtained from Chicago, Joliet and Peoria weather stations. The population density within a 1½-mile radius is 15 per square mile, within 5 miles is 33 per square mile, and within 10 miles is 67 per square mile. The relief of the region as a whole is slight, there being less than 25 feet of elevation difference on the site. The proposed site is located south of the Dresden Heights lock and dam. The first downstream direct use of the Illinois River for drinking purposes is at Alton, Ill., which is approximately 250 miles from the Dresden site and 10 miles downstream from the confluence of the Illinois and Mississippi Rivers.

Reactor plant

The reactor for this facility will be of the boiling-water type. During the course of the AEC review of the application the Company advised that in lieu of the flashing cycle described in Report NPG–111

the plant will utilize a heat exchanger loop. The overall plant was described by the Company as designed to produce a net electrical output of 180,000 kilowatts and about 690,000 kilowatts of heat output. The reactor will probably be fueled either with slightly enriched uranium alloy clad in zirconium or with tubes filled with uranium-oxide pellets.

The reactor core will be contained within a stainless-steel-clad pressure vessel with openings at top and bottom. The design concept requires a vessel 12 feet 8 inches in diameter and 43 feet 6 inches high.

To control the reactor, 120 to 140 control rods are planned if a top entry design is selected, while 70 larger diameter control rods are contemplated for the scheme whereby these rods are operated by a drive mechanism underneath the reactor tank.

Use of boron in luquid form is contemplated in a standby safety device.

The fuel assemblies are to be banded in groups and these are to be handled as units while being inserted and withdrawn. Grid plates are provided both at the top and bottom of the core for purposes of supporting the fuel assemblies.

The turbine-generator unit serving the plant is expected to be approximately 120 feet in length. Six extraction points are provided primarily to remove moisture from the steam.

Auxiliary structures and facilities which are planned consist of fuel-handling building, screen house, high-voltage switchboard, main and auxiliary power transformers, waste-disposal tanks and burial area.

Containment

The containment concept described in the application utilizes a 190-foot diameter steel sphere enclosing the reactor but not the turbines. The primary advantages claimed for not enclosing the turbine are (1) less expensive structure can be provided for the turbine, and (2) placing the turbine outside would impart to the plant an increased degree of flexibility for future expansion and/or improvement. In addition, there are certain safety advantages claimed by the "reactor-only" enclosure concept including the following:

1. The danger of damage to the enclosure in the event of a turbine explosion is eliminated with the turbine outside rotating in a plane not intersecting the enclosure.
2. No penetration is required for the generator main leads which could reduce the overall area required for penetrations by 30 percent.
3. With less equipment enclosed, the need to cut temporary openings into the shell for removing or bringing in large equipment pieces is likely to be less frequent.

The principal safety disadvantage of the reactor-only enclosure is that valves in the reactor-to-turbine steam lines must be relied on to complete the enclosure.

Development and experimental program

The successful operation of two separate boiling water reactor experiments by Argonne National Laboratory at Arco, Idaho, has stimulated the interest of the Commonwealth Edison Co. in a reactor of this type and verified the fact that such a reactor is feasible for power production.

It is to be noted that under the Reactor Development program a 20,000-kilowatt (heat output) boiling water reactor is under construction at Argonne National Laboratory and is expected to be operating in 1957. This reactor should answer many design and operating questions relative to the hazards associated with this type of reactor.

In addition, the General Electric Co. is planning to design and construct within the Vallecitos Valley region of California a developmental boiling water reactor with a 12,000-kilowatt heat output and a 3,000-kilowatt electrical output. This reactor will utilize a direct steam cycle to drive a power generating turbine and provide assistance in evaluating the economic and technical advantages of this type of reactor plant as well as the safety aspects.

Safeguards against accidents.—The design, construction, and manner of operation of a reactor plant must always be such that the likelihood of exposing the general public to radiation hazards by any mechanism, whether it be operating error, equipment malfunctioning, or otherwise, be kept to a minimum. Provisions are incorporated in the basic design concept which provide a means of self-regulation. It has been demonstrated by the extensive tests performed at Arco that in a light-water boiling reactor bubble formation can quench extremely rapid reactor runaways and that reactors can be operated continuously in a stable fashion under boiling conditions.

Developmental problems.—There are two principal technical uncertainties in the development of the boiling reactor type. These are fuel irradiation stability and fuel corrosion resistance. Other uncertainties arise from the lack of data to verify calculations of steam content of the coolant. It is not expected that problems such as these will affect the feasibility of the project.

The question of buildup of radioactivity within the turbine will not be finally settled until a boiling reactor-turbine combination is operated. However, there seems to be little likelihood that the turbine might be so severely contaminated that remote maintenance would be required.

Reactor equipment.—Problems related to fabrication of fuel elements, drive mechanisms, reactor vessel, etc., remain to be resolved and will require extensive amounts of design effort. The relatively large openings in the reactor pressure vessel to permit access to the interior of the reactor during loading and unloading operations will require adequate seals as will the pumps and valves. Certain instruments to be used will require design and development work. Some of these problems are being studied by the applicant and its contractors specifically for the reactor design presently underway. The operating experience gained on boiling water reactors should assure satisfactory solution of most of these problems.

Summary of conclusions

On June 30, 1955, the general design concept proposed for the facility was reviewed by the Advisory Committee on Reactor Safeguards. On November 9, 1955, representatives of the Commission met with representatives of the Commonwealth Edison Co. and General Electric Co. to outline the status of the license application and to indentify the types of information to be submitted at a later date by the applicant. On April 9, 1956, an examination of the proposed site was made by representatives of the Division of Civilian

Application, who were given the following day an informal presentation of current design concept data by representatives of the Commonwealth Edison Co. and General Electric Co.

Using the information on the site in conjunction with the technical information which has been submitted on the reactor and its containment, the staff, with the advice and assistance of the Advisory Com mittee on Reactor Safeguards, concluded that there is no reason to believe that a reactor having the general characteristics and specifications indicated cannot be operated at the site selected without exposing the public to undue hazard.

COMMISSION ACTION

After consideration of the staff conclusions and other factors identified above, the Commission determined that:

(1) the proposed Commonwealth Edison reactor will be a utilization facility as defined in the Commission's regulations contained in title 10, chapter 1, CFR, part 50: Licensing of Production and Utilization Facilities;

(2) Commonwealth Edison proposes to utilize the reactor in the conduct of research and development activities leading to the demonstration of the practical value of that type of reactor for industrial or commercial purposes;

(3) Commonwealth Edison is financially qualified to assume responsibility for the payment of AEC charges for the special nuclear material to be furnished by the AEC, to undertake and carry out the proposed use of the material for a reasonable period of time, and to engage in the proposed activity in accordance with the regulations in chapter 1, title 10, CFR;

(4) Commonwealth Edison and the General Electric Co., the contractor selected by Commonwealth to design and construct its reactor, are technically qualified to design and construct the reactor;

(5) Commonwealth Edison has submitted sufficient information to provide reasonable assurance that a utilization facility of the general type proposed can be constructed and operated at the proposed location without undue risk to the health and safety of the public and that additional information required to complete the application will be supplied; and

(6) the quantity of special nuclear material estimated to be required and the estimated schedules of receipts and returns are reasonable.

Following this action a construction permit, incorporating an allocation of 8,323 kilograms of U–235, was issued on May 4, 1956. This permit was transmitted to the company by a letter of the same date from the Director, Division of Civilian Application, a copy of which is attached.

MAY 4, 1956.

Mr. WILLIS GALE,
Chairman, Commonwealth Edison Co., Chicago, Ill.

DEAR MR. GALE: Enclosed is a construction permit issued by the Atomic Energy Commission authorizing Commonwealth Edison Co. to construct the utilization facility described therein.

You will observe that the final paragraph of this permit established an allocation of 8,323 kilograms of contained uranium–235 for use in

connection with the operation of the facility. This allocation represents the quantity of U–235 estimated to be required for burnup and losses, and assumes that at the end of the license period any remaining U–235 in the possession of Commonwealth Edison Co. or its fuel element fabricator will be returned to the Commission. You will also observe that shipments of U–235 by the Commission to Commonwealth in accordance with schedule 1 of the appendix to the permit will be conditioned upon Commonwealth's return to the Commission of material substantially in accordance with schedule 2 of the appendix. The issuance of this permit and the allocation of U–235 contained therein is not to be construed as a commitment by the Commission to supply the U–235 in any form except UF_6.

The issuance of this permit does not constitute a commitment on the part of the Commission to provide transportation or processing services with respect to the spent fuel.

Your application for license reflects that Commonwealth proposes to pay 100 percent burnup charges on the low-enrichment fuel and to return the spent fuel to the Commission without credit for the U–235 or plutonium contained therein; and that, under these circumstances, Commonwealth would expect the Commission to pay for transportation of this spent material from the reactor site and to pay for subsequent storage of the material. The issuance of the permit, of course, does not constitute a commitment on the part of the Commission to pay for transportation or storage of spent material.

Please communicate with us in the event you have any questions concerning any provisions of the construction permit.

Sincerely yours,

FRANK K. PITTMAN,
Acting Director, Division of Civilian Application.

APPENDIX 10

AEC LETTER DATED MARCH 8, 1957, TO EXECUTIVE DIRECTOR, JOINT COMMITTEE ON ATOMIC ENERGY, FORWARDING AEC REPORTS ON CERTAIN APPLICATIONS FOR CONSTRUCTION PERMITS

ATOMIC ENERGY COMMISSION,
Washington, D. C., March 8, 1957.

Mr. JAMES T. RAMEY,
Executive Director, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR MR. RAMEY: Reference is made to the General Manager's letter to you dated October 17, 1956, forwarding reports discussing the principal factors considered by the Commission and its staff in the issuance of power reactor construction permits to Commonwealth Edison Co., Consolidated Edison Co., and Power Reactor Development Co.

Enclosed are similar reports on the considerations leading to the issuance of a construction permit to General Electric Co. for a power reactor and the issuance of facility licenses to Armour Research

Foundation and Battelle Memorial Institute authorizing construction and operation of their research reactors.

Sincerely yours,

H. L. PRICE,
Director, Division of Civilian Application.

Enclosures.

A. REPORT ON THE CONSIDERATIONS LEADING TO THE ISSUANCE OF A CONSTRUCTION PERMIT, ALLOCATION OF SPECIAL NUCLEAR MATERIAL AND OPERATING LICENSE TO THE BATTELLE MEMORIAL INSTITUTE FOR THE BATTELLE RESEARCH REACTOR

Battelle Memorial Institute is an independent, not-for-profit research organization with principal offices in Columbus, Ohio. It was founded in 1925 and is incorporated under the laws of the State of Ohio. Battelle conducts research and development work in practically all fields of science and technology.

Battelle submitted a license application on May 4, 1955, for the following licenses:

> (*a*) A construction permit for the construction of a research reactor facility near West Jefferson, Ohio;
>
> (*b*) A class 104 license to acquire, possess, and use a research reactor facility near West Jefferson, Ohio, under the terms of section 50.21 of the regulations, and
>
> (*c*) A license to receive, possess, use and transfer special nuclear material for a research reactor facility near West Jefferson, Ohio, under the terms of section 70.3 of the regulations."

The application also requested "that the licenses sought in this application be issued for a period of 10 years."

The license application contains the following statement:

> It is proposed to initiate construction of the proposed research reactor facility on or about July 1, 1955, or as soon thereafter as the construction permit for this facility is issued by the Commission. The earliest date for completion of the construction of the facility will be February 1, 1956. The latest date for completion of construction will be January 1, 1957.

In January 1955, Battelle awarded a contract for the design, engineering, and construction of the reactor to the American Machine & Foundry, Co.

Technical qualifications.—The license application states that: "Of the near 2,100 people employed at Battelle, 126 hold doctors' degrees, 319 have masters' degrees, and 904 have bachelors' degrees." The application also includes a list of the principal officers of Battelle and biographical data on key personnel concerned with the reactor facility. From this and other information available it was concluded by AEC that Battelle is technically qualified to engage in the proposed activities.

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Financial qualifications.—The license application includes the following statements:

> The present annual volume of business, all of which is research and development, is approximately $15,800,000.
> Battelle's total assets are several millions of dollars.

From this and other information available to the Commission it was concluded that the Institute is financially qualified to assume responsibility for the payment of Commission charges for the special nuclear material to be furnished by the Commission, to undertake and carry out the proposed use of the material for a reasonable period of time, and to construct and operate the reactor in accordance with the regulations then proposed for inclusion in title 10, chapter 1, Code of Federal Regulations, which later became parts 50 and 70.

Special nuclear material requirements.—The special nuclear material required for the reactor is uranium enriched to 90 percent in the isotope 235. Based on fuel requirements contained in the application, the total net fuel requirement was calculated to be 5.2 kilograms of contained U–235. It was concluded by AEC that these requirements are reasonable for a reactor of this concept and power level.

Reactor description and hazards evaluation.—The Battelle research reactor is a water cooled, water moderated "pool" type reactor designed to operate on U–235 at a power level of 1,000 kilowatts. The reactor is located in Ohio on a 400-acre tract about 2 miles southwest of West Jefferson, 13 miles west of Columbus, and 30 miles east of Springfield. There are 43,000 inhabitants in a 10-mile radius and 60 inhabitants in a 1-mile radius of the reactor.

The reactor core is an assembly of 10-plate MTR type fuel elements each containing 162 grams of U–235. The critical mass for the cold, clean, water-reflected core is about 3.5 kilograms of U–235. The core may be located in either an open pool or experimental stall position. The experimental stall contains six neutron beam holes and a graphite thermal column.

The reactor is controlled by 4 cadmium shim-safety rods and 1 stainless steel regulating rod. The regulating rod has a maximum effectiveness of 0.6 percent reactivity so that misoperation of this rod cannot result in prompt criticality. Each shim-safety rod has a control worth in excess of 3 percent reactivity. The shim-safety rods are connected to the rod drives by lifting magnets. When a potentially dangerous condition occurs, the current to these magnets is interrupted and the four rods fall by gravity into the core, causing it to become subcritical. During operation, one of these rods is always maintained fully withdrawn from the core and acts as a pure safety rod.

The reactor instrumentation system is similar to that for the bulk shielding reactor at ORNL. There are 2 compensated ion chambers, 1 provides a signal for automatic operation of the regulating rod and the other a signal for a period meter which scrams the reactor if the reactor period becomes less than 10 seconds. In addition, there are two ion chambers which provide power level signals. An alarm sounds if the power level becomes 110 percent of normal and the reactor is scrammed if the power level reaches 150 percent of normal.

The reactor is cooled by forced circulation of pool water through the reactor core. Pool water is purified by circulation through a demineralizer in order to limit corrosion of the fuel elements.

Some of the important design features of the reactor which are relevant to safety are:

1. The negative temperature coefficient of reactivity.
2. The small reactivity worth of the automatically controlled regulating rod.
3. The lifting magnet arrangement on the shim-safety rods.
4. The period meter and power level scram instrumentation.
5. The maximum energy release possible due to an excursion based on the Borax destructive experiments on this type of reactor.

In June 1955, the Advisory Committee on Reactor Safeguards reviewed Battelle's hazards report BMI–ACRS–601, dated April 4, 1955. Based upon the results of the review by the ACRS and the AEC technical staff, it was determined that the proposed Battelle reactor could be constructed and operated at the proposed site without undue risk to the health and safety of the public.

AEC action on application.—On August 5, 1955, a construction permit was issued to Battelle authorizing construction of the facility described in the application. The permit incorporated an allocation of 5.2 kilograms of U–235.

CONVERSION OF CONSTRUCTION PERMIT TO OPERATING LICENSE

The reactor was inspected on June 21, 1956, and found with one exception to have been constructed substantially in accordance with plans and specifications which were conditions of the construction permit. The exception, relating to the automatic control system, is discussed below.

Based on a review made by and advice from the Commission's technical staff it was determined that there was reasonable assurance that the operation of this reactor, with certain restrictions, would not jeopardize the health and safety of the public. The evaluation included a review of the following information submitted by Battelle as part of their license application:

1. Hazards Report ACRS–BMI–601 dated April 4, 1955.
2. Emergency Plan for the Battelle Research Reactor dated June 5, 1956.
3. A Summary of Tests, Critical Experiments, Start-up Plans, and Excess K Requirements for the Battelle Research Reactor.

The preoperational inspection of the reactor by the Division of Inspection disclosed that the control system as constructed presents a potential safety problem in that it may result in an undesirable increase in the reactivity of the reactor in the event of a malfunction of the control system. This condition was brought to the attention of the Institute and it was agreed that the shim rods would be operated manually pending a thorough evaluation of the possible hazards involved in the automatic operation. A condition to this effect was included in the license to operate the facility, which was issued on August 10, 1956. Among the other operating restrictions established in the license are:

1. The Institute shall not operate the reactor at power levels in excess of 1,000 kilowatts without previous authorization from the Commission.
2. The fuel loading in the reactor shall be such that the excess reactivity will not exceed that required for operation without

experiments at 1,000 kilowatts in the particular operation position being utilized.

B. REPORT ON THE CONSIDERATIONS LEADING TO THE ISSUANCE OF A CONSTRUCTION PERMIT, THE ALLOCATION OF SPECIAL NUCLEAR MATERIAL AND FACILITY LICENSE TO ARMOUR RESEARCH FOUNDATION

Armour Research Foundation of Illinois Institute of Technology, Chicago, Ill., submitted an application dated January 7, 1955, for the necessary licenses to construct and operate a homogeneous solution type research reactor designed to operate at 50 kilowatts and be used in a broad industrial research program. The location proposed for the reactor was at the technology center, 35th and State Streets in Chicago.

Armour applied to the AEC—

(*a*) for the issuance of a license to the applicant to possess, receive, transfer and use special nuclear material in the conduct of research and development activities under a license issued pursuant to section 104–c;

(*b*) for issuance of a license to the applicant to acquire, possess and use utilization and production facilities useful in the conduct of research and development activities of the type specified in section 31;

(*c*) for issuance of a permit to the applicant for construction of the facilities to be licensed; and

(*d*) for issuance of licenses to certain individual employees of the applicant, as operators of the facilities to be licensed.

The application stated that "construction of the facilities for license of which application is hereby made will be completed not earlier than October 1, 1955, and not later than June 30, 1956."

Technical qualifications.—Armour selected North American Aviation, Inc., to construct the proposed reactor. Direction of the completed facility was to be the responsibility of the manager, physics research department, assisted by the supervisor, nuclear physics section. All research programs will be subject to the review of a reactor supervisory committee appointed by the director of the foundation. The foundation has a nuclear physics staff of some 12 members, including a health physicist who will be closely associated with projects utilizing the reactor. It was concluded by the AEC that Armour is technically qualified to engage in the proposed activities.

Financial qualifications.—The application states—

> it is expected that the reactor will be a self-supporting installation through industrial sponsorship of research programs. However, in order to undertake this program, the foundation is enlisting the aid of approximately 20 industrial companies who will participate in the initial research program for a sum of $20,000 each. Three hundred thousand dollars has been set aside by the foundation to support the research activity on the reactor for the first 3 years.

A copy of the foundation's latest financial statement was attached. From this and other information available to the Commission, it was

concluded that Armour is financially qualified to assume responsibility for the payment of Commission charges for the special nuclear material to be furnished by the Commission, to undertake and carry out the proposed use of the material for a reasonable period of time, and to construct and operate the reactor in accordance with the regulations then under consideration for inclusion in title 10, chapter 1, Code of Federal Regulations as parts 50 and 70.

Special nuclear material requirements.—The application requested that 1 kilogram of uranium 235 be allocated for this facility in the form of concentrated solution of uranyl sulphate in distilled light water. This was the amount of material stated by Armour to be required for initial operation. It was concluded by the AEC that this requirement is reasonable for a reactor of this concept and power level.

Reactor description and safety considerations.—The design, location and operation of the proposed reactor was covered by the applicant in Report NAA–AER–1135, "Description and Hazard Analysis of a 50 Kilowatt Homogeneous, Solution Type Research Reactor * * *," prepared by Armour and North American Aviation and submitted with the original application. The Armour reactor is based on the Supo unit at Los Alamos as modified by experience obtained in construction of North American's water boiler neutron source and the Livermore reactor. The core consists of a 12½-inch diameter spherical tank made of stainless steel containing a fuel solution of enriched uranium 235 in the form of UO_2SO_4 dissolved in light water. The core is cooled by circulation of refrigerated distilled water passing through cooling coils. Four vertically oriented control and safety rods provide regulation and shutdown for the reactor. A biological shield of magnetite concrete is provided to reduce radiation levels at the surface of the shield to less than 1 mr/hr.

Since the reactor was to be located in the city of Chicago, the report provided that containment of fission products would be provided for the maximum possible reactor incident. On the basis of present knowledge and experience, it was concluded by the Commission's technical staff and advisers that the proposed reactor could be operated at the proposed location without undue hazard to the public. Detailed operating restrictions were to be determined later on the basis of the results of kinetic experiments conducted by AEC on other homogeneous solution reactors. It was anticipated that these experimental data would be available before completion of the Armour reactor.

Allocation of special nuclear material and issuance of construction permit.—As a result of the above considerations, the Commission issued a construction permit to Armour on March 28, 1955. The permit included an allocation of one kilogram of U–235. The letter of transmittal for the permit stated that final operating conditions and restrictions would be based on the results of transient tests to be performed on this type of reactor by AEC and that the operating conditions authorized may be more restrictive than those proposed by Armour in its application.

Amendment to license application.—On February 10, 1956, Armour submitted an amendment to its application specifying a limitation on the operating level of the reactor to 10 kilowatts until completion of the kinetic experiments. On April 5, 1956, Armour submitted proposed standard operating procedures and criticality procedures for the Armour reactor.

CONVERSION OF CONSTRUCTION PERMIT TO OPERATING LICENSE

On June 11, 1956, the Division of Inspection advised the Division of Civilian Application that a preoperational inspection of the Armour reactor had been completed; that the reactor had been constructed in accordance with the design described in the application; and that in its opinion the reactor could be operated safely.

The technical staff reviewed all information pertinent to the possible hazards associated with the operation of this reactor and concluded that the reactor could be operated without undue risk to the public health and safety subject to the following operating restrictions:

(*a*) The power level of the reactor will not exceed 10 kilowatts.

(*b*) The fuel loading in the reactor will be such that the excess reactivity above cold clean critical will not exceed 1.66 percent.

On June 12, 1956, license No. R–3 was issued to Armour Research Foundation authorizing operation of the reactor. The license incorporated the operating restrictions described above.

C. REPORT ON THE CONSIDERATIONS LEADING TO THE ISSUANCE OF A CONSTRUCTION PERMIT AND THE ALLOCATION OF SPECIAL NUCLEAR MATERIAL TO THE GENERAL ELECTRIC CO. FOR THE DEVELOPMENTAL BOILING WATER REACTOR

In a letter dated October 3, 1955, the General Electric Co. notified the Division of Civilian Application of its intention to obtain a license to build and operate a small, developmental boiling reactor at a site then being acquired. The company stated that while this reactor would serve a variety of needs, its early completion is dictated by the need for information for the design and operation of the Commonwealth Edison-nuclear power group reactor.

General Electric submitted an application dated January 10, 1956, for a license for the 3,000 kilowatt (electrical) developmental boiling water reactor. The application also requested a special nuclear material license. The location proposed for the reactor was General Electric's Vallecitos Laboratory site in Alameda County, Calif. A license period of 7 years was requested.

The application stated that "the developmental boiling water reactor is expected to be completed at the earliest in April 1957 and at the latest in November 1957."

Technical qualifications.—General Electric has more than 15 years of experience in the field of atomic energy. The atomic power equipment department of General Electric, which is responsible for the developmental boiling water reactor project, was organized in 1955, and the managerial personnel have many years of experience in the design, testing and operation of nuclear reactors at Argonne, Hanford, Oak Ridge, and West Milton. Based on the foregoing it was determined by the AEC that General Electric is technically qualified to engage in the proposed activities.

Financial qualifications.—As evidence of its financial qualifications, General Electric submitted with its application a copy of the latest annual report to its stockholders. From a review of the consolidated statement of financial position contained therein it was concluded that General Electric is financially qualified to assume responsibility

for the payment of Commission charges for the special nuclear material to be furnished by the Commission, to undertake and carry out the proposed use of the material for a reasonable period of time, and to construct and operate the reactor in accordance with the regulations contained in title 10, chapter 1, Code of Federal Regulations, parts 50 and 70.

Special nuclear material requirements.—The application requested an allocation of 50 kilograms of U–235 for an initial shipment and included a table of requirements by years for subsequent receipts for the period of the license. Analysis of these requirements by AEC indicated deliveries of 200 kilograms of U–235 to the applicant and returns of scrap and spent fuel elements to the AEC totaling 171 kilograms of U–235 during the period of the license. It was concluded that these requirements are reasonable for a reactor of this concept and power level.

Reactor description and safety considerations.—The reactor vessel consists of a 6-foot diameter stainless steel tank, 15 feet high, which is mounted vertically in a concrete shield. The chain reacting core is centrally located within this tank. While the exact composition of the core will vary due to the developmental nature of this facility, the core will always consist of materials which cannot react with water to produce large amounts of heat. The core will consist of metallic plate fuel assemblies using fully enriched uranium oxide in a stainless steel matrix clad with stainless steel or uranium oxide assemblies using normal or slightly enriched uranium oxide in the form of rods encased in stainless steel tubes.

The reactor will be housed in a pressure tight steel building of sufficient capacity and strength to accommodate the steam which would result in the event of sudden insertion of 1½ percent reactivity followed by rupture of the reactor tank. The approximate dimensions of this building are 35 feet diameter, 50 feet high, and this building will be designed to accommodate a safe working pressure of 45 pounds per square inch gage. The power generating equipment, together with pumps and heat exchangers, will be housed in a separate building.

Preliminary technical information on the reactor was submitted to AEC in Report GEAP–069, "Technical Information and Environmental Factors Regarding Developmental Boiling Water Reactor," which was incorporated by reference in General Electric's application. The applicant recognized that the technical information contained in its application is incomplete and stated that a final detailed technical report will be submitted when the design of the facility is completed.

From the data submitted it was concluded by the AEC that a facility of the general type proposed by General Electric could be constructed and operated at the proposed location without undue risk to the health and safety of the public. It was further determined that General Electric proposes to utilize the reactor in the conduct of research and development activities leading to the demonstration of the practical value of the boiling water type of reactor for industrial or commercial purposes.

AEC action on application.—On May 14, 1956, a construction permit was issued to General Electric Co. authorizing construction of the facility described in the application. The permit incorporated an allocation of special nuclear material in the quantity and in accordance with the schedule requested by General Electric.

APPENDIX 11

A. AEC ANNOUNCEMENT DESCRIBING ORGANIZATION OF THE DIVISION OF CIVILIAN APPLICATION

ATOMIC ENERGY COMMISSION,
Washington, D. C., November 2, 1956.

Announcement No. PSMO–3

ORGANIZATION OF THE DIVISION OF CIVILIAN APPLICATION

For: Principal Staff, Washington.
Managers of Operations.

This announcement sets forth the current organization and functional assignments within the Division of Civilian Application.

Director of Civilian Application, Harold L. Price

Plans, develops, and directs the Commission's civilian application program including, specifically, (*a*) the preparation, issuance, and administration of regulations for the licensing of source, special nuclear, and byproduct materials, production and utilization facilities, and of operators of such facilities; (*b*) administration of the program for granting access to restricted data relating to the civilian uses of atomic energy; (*c*) developing and administering plans and policies for encouraging participation of private enterprise in the development of the civilian uses of atomic energy and for identification of industrial activities, including those performed by AEC, which lend themselves to performance by industry; (*d*) developing and administering policies for the determination of prices and specifications applicable to materials and services furnished to licensees and others; (*e*) planning and developing a program for indemnification of licensee and others against public liability claims arising out of nuclear incidents; (*f*) the handling of requests for authorization to export materials and engage in activities abroad in the atomic energy field; and (*g*) for promoting public understanding of these programs.

Deputy Director, Dr. Frank K. Pittman

Assists the Director in formulating, evaluating, and administering plans and policies in the development of the civilian application program.

Deputy Director for Hazards Evaluation, Dr. C. Rogers McCullough

Assists the Director in formulating, evaluating, and administering plans and policies concerned with the hazards evaluation of nuclear facilities.

Assistant Director, Eber R. Price

Acts for the Director in administrative matters, assists in the formulation, review, and evaluation of general policy in the civilian application program, and coordinates the activities of the Division's staff in all functional areas.

Hazards Evaluation Branch, Dr. C. K. Beck, Chief

Responsible for developing standards, criteria, guides, and codes for the safe design, construction, and operation of nuclear facilities (both Government-owned and privately owned); evaluates the hazards

aspects of all proposed nuclear facility proposals and all significant changes in existing facilities with regard to safe design, operation, supervision, containment, and location; provides staff advice and assistance to AEC offices and divisions on the safety aspects of reactors; participates in the planning and evaluation of experimental work pertinent to the field of reactor safety; and develops comprehensive plans for conducting investigations of reactor accidents.

Isotopes Extension, Oak Ridge, Dr. Paul C. Aebersold, Director

Administers the programs for (*a*) the licensing and distribution (including export and import) of byproduct materials and for related irradiation services; (*b*) advising and assisting in the development of production requirements for byproduct materials; (*c*) encouraging the peaceful uses of such materials; and (*d*) providing assistance to licensees on health protection procedures and in other matters related to the safe use of byproduct materials.

Licensing Branch, Lyall E. Johnson, Chief

Administers the AEC regulations for licensing production and utilization facilities, operators of such facilities, and source and special nuclear materials. Develops, analyzes, and consolidates data reflecting requirements of licensees for source and special nuclear materials and administers the AEC regulations for allocating and distributing such materials. Maintains liaison with other Government agencies on matters relating to security trade controls.

Orders and Regulations Branch, Bernard B. Smyth, Chief

Develops the rules and regulations required to implement the Division's programs. Determines the adequacy of existing rules and regulations and the need for new rules and regulations; administers various regulatory matters not falling within the responsibilities of other branches of the Division, including the development and administration of policies and procedures governing the foreign activities of private persons under section 57a (3) of the Atomic Energy Act of 1954.

Commercial Development Branch, Charles G. Manly, Chief

Responsible for the development of policies and procedures and for the direction of programs (*a*) to encourage and assist private participation and investment in the civilian applications of atomic energy; (*b*) to identify industrial activities, including those performed by AEC, which lend themselves to performance by private industry; (*c*) for granting access, through the access program, to restricted data relating to the civilian applications of atomic energy; (*d*) for the preparation and dissemination of useful statistics and reports of the private atomic energy industry; and (*e*) for the development of policies and procedures governing the indemnification of licensees and others against public liability claims arising out of nuclear incidents.

Materials and Services Branch, Myron B. Kratzer, Chief

Develops and administers, policies, programs, and procedures for permitting private industry to secure materials and services from AEC and for coordinating with interested divisions and offices detailed plans and programs for accomplishing this objective; develops and coordinates overall AEC policies, standards, and procedures, prices, and specifications relating to (*a*) materials sold or leased by AEC to

private industry or any such material acquired by the AEC from private industry and services furnshed by AEC to private industry, (*b*) the use of AEC facilities by industrial and other private organizations for private purposes, and (*c*) the use of AEC and contractor employees in providing consultations to private industry.

Radiation and Interagency Branch, Eugene E. Fowler, Chief

Plans, develops, and administers programs for (*a*) cooperation and consultation with States and their political subdivisions as to regulatory and other matters of mutual interest; (*b*) development of radiological health and safety standards in the use, storage, and disposal by licensees of byproduct, source, and special nuclear materials, and (*c*) encouraging participation by private enterprise in the production and distribution of byproduct materials and, in collaboration with the Isotopes Extension, encouraging the peaceful uses of such material. Provides technical advice in connection with the evaluation of applications for licenses for such material to assure that the proposed use of the materials will not be inimical to the public health and safety.

HAROLD L. PRICE,
Director, Division of Civilian Application.

B. AEC LETTER DATED DECEMBER 12, 1956 TO JOINT COMMITTEE CONCERNING SEPARATED STAFF FOR PRDC HEARING

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C., December 12, 1956.

Re Matter of Power Reactor Development Company, Docket No. F–16

Hon. CLINTON P. ANDERSON,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR SENATOR ANDERSON: This is to advise you that in connection with the matter of Power Reactor Development Company, Docket No. F–16, the Commission has established a separated staff for the preparation and conduct of the proceeding on behalf of AEC, and to describe generally the functions of such a staff. In considerable part this letter will confirm matters which have previously been stated orally to members of the Joint Committee staff.

While section 5c of the Administrative Procedure Act, requiring separation of functions, does not apply to proceedings involving initial licensing, the Commission has felt that adopting the separation of functions in its first formal hearing under the licensing program is desirable.

In the preparation and conduct of the proceeding, the separated staff will not be subject to supervision by persons not on the separated staff. This staff will not participate in advising the Commission with respect to its decision on the record established at the hearing except by briefs and other statements on the record. Copies of all pleadings, briefs, and memoranda filed by AEC as well as by the other parties to the proceeding are being sent to the Joint Committee staff on a current basis.

The remainder of the AEC staff will be available to the Commission to give advice and recommendations on the basis of the record established at the hearing to aid the Commission in making its final

decision. To assure the impartiality of these AEC staff members in advising the Commission, the Commission has directed that such staff members may not discuss with members of the separated staff questions relating to the position to be taken by the separated staff at the proceedings. Such staff members, of course, are free to discuss with members of the separated staff any facts or expert opinion that they may have which are relevant to the issues, to appear on request of the separated staff as witnesses in the proceeding, and to discuss with the separated staff matters relating to such appearances as witnesses.

The separated staff will attempt in the public interest to insure that all relevant facts not brought out by the other parties are fully developed at the hearing. After the Power Reactor Development Co. and the intervenors have introduced their respective cases into the record, counsel for the separated staff will introduce such additional evidence, as appropriate, to insure that an adequate and complete record is presented to the Commission as the basis for its decision on the application by Power Reactor Development Co. for a construction permit.

The separated staff will be free to take such positions during the hearing and to make such recommendations and proposed findings to the Commission on the public record as it deems appropriate.

Sincerely yours,

K. E. FIELDS, *General Manager.*

APPENDIX 12

LETTERS CONCERNING AEC PROPOSED REGULATION PART 9 ON "PUBLIC RECORDS"

A. LETTER DATED OCTOBER 31, 1956, FROM AEC TO JOINT COMMITTEE

ATOMIC ENERGY COMMISSION,
Washington, D. C., October 31, 1956.

Hon. CLINTON P. ANDERSON,
Chairman, Joint Committee on Atomic Energy,
United States Senate.

DEAR SENATOR ANDERSON: This is to inform you that the Commission has approved for publication and public comment a proposed regulation on "public records." A copy of the proposed regulation is attached.

As you are aware, the Commission has adopted a general provision dealing with the availability to the public of records in proceedings covered by the rules of practice contained in part 2 of title 10 of the Code of Federal Regulations. Section 2.790 of the rules of practice provides a general statement regarding such records and an exception. The purpose of the proposed regulation is to define in detail which of the records in proceedings covered by part 2 and the access-permit regulation contained in part 25 of title 10 of the Code of Federal Regulations will be made available for public inspection.

This regulation adopts the philosophy that all of the records of the Commission relating to its regulatory activities are available for public

inspection except in certain specified areas. The public record in connection with regulatory proceedings will include, among other things, all filings in proceedings and correspondence regarding such proceedings. It is the intention of the Commission to make available to Congress and the general public detailed safety information on each production or utilization facility for which a construction permit or license is sought prior to the issuance of both the construction permit and the license. The exact vehicle to accomplish this has not as yet been determined by the Commission. The regulation provides for making such safety information part of the public record as well as safety information submitted by an applicant or licensee.

The records directed to be withheld include, among other things, records relating to personal information including medical records; documents prepared for use within the Commission or the executive branch of the Government, correspondence received in confidence relating to possible violations of laws or regulations, correspondence with a Member of Congress or congressional committee which has not been released by the Member or committee concerned.

Sincerely yours,

LEWIS L. STRAUSS, *Chairman.*

B. LETTER DATED NOVEMBER 9, 1956, FROM MR. HAROLD P. GREEN TO AEC, COMMENTING ON PROPOSED REGULATION

LAW OFFICES OF HAROLD P. GREEN,
Washington, D. C., November 9, 1956.

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C.

(Attention: Director, Division of Civilian Application.)

GENTLEMEN: I am submitting herewith my comments on the proposed new rules governing access to the Commission's public records in connection with licensing, access permit, and rulemaking proceedings.

Section 9.3 of the proposed regulations describes the matters which are regarded as "public records," and which "normally" will be made available for inspection in the public document room. It is not clear why the term "normally" is used. All public records should be available for inspection in the public document room as a matter of course, and they should be placed in the public document room as a matter of course immediately upon being filed, or, in the case of AEC-originated material, immediately upon being dispatched. This would assure individuals using the public document room that the information therein can be relied upon as fully current and accurate.

Perhaps "normally' is used to distinguish classified records, which, of course, cannot be made available for general public inspection. In this connection, it would be desirable for the Commission to establish a classified public document room so that holders of access permits and others authorized to have access to restricted data reflected in such records would have the opportunity to examine these papers without unnecessary inconvenience, redtape, and formality.

Section 9.4 of the proposed rules establishes certain explicit exceptions to the matters regarded as "public records." Certain of these exceptions warrant comment.

Section 9.4 (a) excludes from the "public records" any document when AEC finds, at the request of the person concerned, that disclosure is not required in the public interest and would adversely affect the interest of the person concerned. Section 2.790 (c) clearly places upon the person making such request the burden of establishing that the document should be thus privileged against disclosure, as well as the burden of segregating any privileged information from information which can and should be made public. There have been numerous indications that AEC officials have been lax in imposing this requirement and that they have countenanced nondisclosure without the requisite affirmative showing by applicants for licenses and permits. It is suggested that the Commission look into this situation in order to make the proposed rules really effective and meaningful.

In addition, it should be noted that section 2.790 (b) provides that the withholding of any material from public inspection shall not affect the right of persons "properly and directly concerned" to inspect the documents. Implementation of this right requires that the "public record" reflect the existence of any such privileged document with such maximum description of its general nature and contents as is consistent with nondisclosure of the privileged matter.

Section 9.4 (c) excludes from the "public records" interagency and intra-agency communications. This is too broad. Any communication from another Government agency (and, indeed, from any "person" within the meaning of section 11 (n) of the 1954 act) which is intended to or which may influence the Commission's decision in any "proceeding" should be made part of the "public record." Similarly, some intra-agency communications—at least those addressed to the Commission by the AEC after a separation of functions in a proceeding—pertaining to proceedings should not be privileged.

Section 9.4 (c) also excludes from the "public records" communications prepared by "AEC personnel," including, as that term is defined in section 9.2 (f), consultants and members of AEC advisory boards. It would appear that consultants and members of advisory boards, if they are AEC employees at all, are at best only part-time employees. It is recognized that the Commission frequently relies upon consultants and advisory boards for the kind of service normally performed by its staff, and that in most instances the Commission can assume that consultants and advisory boards will be just as objective as the staff itself. In some situations, however, where private interests are involved, as in licensing proceedings, some question as to the objectivity of consultants and advisory board members may arise on the ground that the other employment or activities of such individuals may influence their position with respect to proceedings before the Commission. It seems desirable and appropriate, therefore, that if the Commission chooses to use such individuals in connection with proceedings before it, all aspects of this use should be fully included in the "public records."

The proposed rules apply, by their terms, only to records relating to "any proceeding subject to part 2 and part 25 of this title." It is not clear whether the Commission would interpret the rules so as to make them applicable to specific authorizations by the Commission under section 57 (a) (3) of the act and to authorizations pursuant to agreements for cooperation. Such proceedings are in effect licensing

proceedings and the rules of practice and the rules governing public records should apply in these areas.

Very truly yours,

HAROLD P. GREEN.

C. LETTER DATED NOVEMBER 16, 1956, FROM MR. ALEX RADIN TO AEC COMMENTING ON PROPOSED REGULATION

AMERICAN PUBLIC POWER ASSOCIATION,
Washington, D. C., November 16, 1956.

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C.

(Attention: Mr. Harold Price, Director, Division of Civilian Application.)

DEAR MR. PRICE: On behalf of the American Public Power Association, I should like to submit for your consideration comments on one subsection of the proposed Commission rule on "public records" (pt. 9).

My comments have to do with subsection 9.4, which defines the types of documents which are not to be included in the public records. Paragraph (c) of subsection 9.4 states that among the documents not to be included in the public records are:

"(c) Intra-agency and inter-agency communications, including memorandums, reports, correspondence, and staff papers prepared by members of the Commission, AEC personnel, or by any other Government agency for use within the AEC or within the executive branch of the Government."

While recognizing the practical necessity for some limit on the intra-agency and inter-agency documents which are to be placed in the public record, I believe that there are strong objections to the total a priori exclusion of such documents from the record.

There surely will be instances when a document of one of the types listed in paragraph (c) will have a direct effect on Commission proceedings, such as a licensing action, and where public access is necessary and desirable for applicants, other parties at interest, and the general public.

The proposed language would exclude, for example, the reports of the AEC Advisory Committee on Reactor Safeguards. Public access to such reports seems necessary because they are highly relevant to license proceedings and could have a direct effect on Commission action on a license application. In some cases, only such reports might disclose to other parties, that they had an interest in the proceedings. There is also a further reason. The members of an advisory board are regularly employed by private organizations and only occasionally and sporadically employed by the Federal Government. It is no reflection on the members of such boards to point out that occasions may arise where one or more will have divided loyalties in connection with a specific proceeding. If advisory boards are to continue to be used in connection with license proceedings, then surely their reports should be part of the public record in order to assure that they continue to function impartially and responsibly.

These same remarks apply with equal force to a report or opinion

rendered in respect to a specific proceeding by a consultant to the Commission.

It seems probable that there will be times when other intra-agency documents such as an opinion of the AEC General Counsel (other than those covered by subsec. 9.3 (c)), should be publicly available in fairness to an applicant for a license or other parties at interest.

The proposed exclusion of interagency communications means, I assume, that if the Federal Power Commission, for example, had an interest in some particular proceeding its opinion might be excluded from the public record. It is difficult to understand the justification for a rule which could have this effect. In this connection, it is of interest to note that where Congress by law required reports on license applications by the Attorney General, under section 105 (c) of the Atomic Energy Act of 1954, in respect to possible violations of the antitrust laws, it also required that "such advice shall be published in the Federal Register." Where Congress specifically required an opinion by another agency on a proceeding, it also required the Commission to make this opinion available to the public.

I am sure you would agree that it is desirable for the Commission to make earnest efforts to place as much information in the public record in respect to its regulatory activities as it can, in order to increase the ability of prospective licensees and the general public to become informed in a new and important field and to provide increased assurances that the public business is being conducted with a maximum of openness and candor. Subsection 9.4 (c) of the proposed rule does not appear to face in this direction.

Sincerely,

ALEX RADIN.

APPENDIX 13

REQUESTS BY LICENSE APPLICANTS TO WITHHOLD MATTERS FROM PUBLIC INSPECTION

A. LETTER DATED NOVEMBER 27, 1956, FROM AEC TO GENERAL DYNAMICS CORP.

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington 25, D. C., November 27, 1956.

GENERAL ATOMIC DIVISION OF GENERAL DYNAMICS CORP.,
Post Office Box 608, San Diego, Calif.
(Attention: Mr. Frederic de Hoffmann, Vice President.)

GENTLEMEN: This is to acknowledge your filing on October 25, 1956, of an application for a special nuclear material and utilization facility license. The application has been docketed No. F–37 and will henceforth be so designated.

It has been noted that part II of the application has been designated by you "General Atomic Private Data," and that you have requested that it be treated as private information. As discussed with Mr. H. B. Fry on November 15, examination of part II reveals, however, that to a large degree the material contained therein is not the type of data we normally consider appropriate to withhold from public inspection. For instance, among other matters, the site data, de-

scription of the building, and hazards-evaluation data are not usually considered to be in the proprietary category.

Accordingly, unless within 30 days you specify with more particularity, by appropriate amendment and revision of your application, the material you seek to have withheld pursuant to section 2.790 of the Commission's Rules of Practice and further explain the basis for requesting the withholding of such information, part II of the application shall be made available for public examination in the Commission's public document room. In the event you are unable to amend your application in these respects within this period, you may wish to consider requesting withdrawal of your present application and the submission of a new application at a later date.

Under the regulations contained in part 2 of title 10 of the Code of Federal Regulations, any interested person has a right to review a license application from the time it is filed to consider whether he wishes to file a petition for a formal hearing. For that reason we will be unable to take action on your application until a reasonable time after your request for withholding has been resolved.

Sincerely yours,

H. L. PRICE,
Director, Division of Civilian Application.

B. LETTER DATED MARCH 6, 1957, FROM AEC TO JOINT COMMITTEE FORWARDING REPORT ON REQUESTS TO WITHHOLD MATTERS FROM PUBLIC INSPECTION

ATOMIC ENERGY COMMISSION,
Washington, D. C., March 6, 1957.

Mr. JAMES T. RAMEY,
Executive Director, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR MR. RAMEY: This enclosed report is forwarded in response to a recent telephonic request by Mr. Toll of the Joint Committee staff to Lyall Johnson of this Division for information concerning requests made to AEC by facility license applicants to withhold matters of official record in license proceedings from public inspection.

Sincerely yours,

H. L. PRICE,
Director, Division of Civilian Application.

Enclosure: Report.

REPORT OF REQUESTS FROM LICENSE APPLICANTS TO WITHHOLD MATTERS OF OFFICIAL RECORD IN FACILITY LICENSE PROCEEDINGS FROM PUBLIC INSPECTION AND AEC ACTIONS TAKEN WITH RESPECT TO SUCH REQUESTS

This report has been prepared in response to a telephonic request by Mr. David Toll of the Joint Committee on Atomic Energy staff. Mr. Toll requested a report reflecting the requests received by AEC from license applicants to withhold from public inspection matters of official record relating to applications for facility licenses, and the AEC actions taken with respect to these requests.

1. Aerojet-General Nucleonics, San Ramon, Calif.

This company requested withholding from public disclosure of appendix A of its Hazards Summary Report for the AGN 201 Reactor, which was submitted in support of the company's request for a license to operate the facility. Appendix A consists of a series of detailed engineering drawings of the AGN–201 reactor, which supplemented more general overall specifications set forth in other portions of the application. In its request for withholding AGN stated that the material in this appendix is proprietary information developed by the company entirely with private funds.

The reasons cited by the company for withholding the information from public disclosure were considered by AEC to warrant a determination that public disclosure is not required in the public interest and would adversely affect the interest of the company.

2. Daystrom, Inc., Elizabeth, N. J.

Appendix E of amendment 1 of an application filed by Daystrom, Inc., for a license to construct and operate an "Argonaut-type" research reactor is a statement of financial data relating only to the Daystrom Nuclear Division of the company. The company has stated that this reactor will be the first of a number of such reactors it proposes to manufacture for sale to properly licensed institutions. The document includes a detailed breakdown of estimated cost figures for development, manufacture, and marketing this type of reactor. Daystrom requested that the information contained in appendix E be withheld from public disclosure "on the grounds that it includes matters pertinent to internal working capital of Daystrom, and has no bearing on public interest." This document was submitted by the company in response to an AEC request for information with respect to the cost of construction and operation of the proposed facility.

The reasons cited by the company for withholding the information from public disclosure were considered by AEC to warrant a determination that public disclosure is not required in the public interest and would adversely affect the interest of the company.

3. General Dynamics Corp., San Diego, Calif.

In connection with its application for license covering a critical experiment facility, the general atomic division of General Dynamics Corp., submitted the information to support its application in two separate documents, part I and part II. The company requested that part II be withheld from public disclosure, stating that:

> * * * Part II incorporates proprietary information relating to the design and properties of a research reactor which we believe to be novel and may eventually be offered for sale. Second, in the event that the conception involved, or features thereof, reasonably appear to be patentable after further development, we will wish to apply for patents as may be appropriate. We do not wish to encourage possible interferences in connection with such future patent applications by publishing the conceptions at this time.

A preliminary examination by AEC of part II showed that it contained the major portion of the technical details of the facility, the site location and description, and other data not generally considered to be of a proprietary nature. (A copy of the company's request for

withholding and a copy of the AEC letter to the company dated November 27, 1956, with respect to its request, were furnished to Mr. Toll of the JCAE staff by letter dated December 20, 1956.) Subsequently, the company resubmitted the information originally in part II of its application. The information the company now wishes to have withheld from public disclosure is contained in part III, which has been excerpted from the original part II. The company's current request for withholding is under review by the AEC staff.

4. General Electric Co., atomic power equipment department, San Jose, Calif.

General Electric Co. requested that appendix A of amendment No. 2 of its license application for a critical experiment facility be withheld from public disclosure. This appendix furnishes a detailed description of an experimental lattice arrangement and the method to be used to check fuel enrichment before loading.

A determination has not been made with respect to this request. The company is being asked to furnish additional information concerning the reasons for requesting withholding of the information from public disclosure.

APPENDIX 14

DOCUMENTS CONCERNING NEW PROCEDURES FOLLOWED BY AEC ON APPLICATION FOR PROPOSED RESEARCH REACTOR NEAR PRINCETON, N. J.

A. AEC PRESS RELEASE OF DECEMBER 28, 1956

UNITED STATES ATOMIC ENERGY COMMISSION

Washington, D. C.

(For immediate release, Friday, December 28, 1956)

AEC GIVES NOTICE OF PROPOSED ISSUANCE OF CONSTRUCTION PERMIT FOR INDUSTRIAL RESEARCH REACTOR IN NEW JERSEY

The Atomic Energy Commission has given notice of the proposed issuance of a permit to AMF Atomics, Inc., of New York City—a division of American Machine & Foundry Co.—for construction of a pool-type research reactor in Plainsboro Township, N. J.

A notice to be published in the Federal Register on December 29, 1956, announces that the Commission will issue the permit unless within 15 days after publication of the notice a request for a formal hearing is filed with the Commission in the manner prescribed by the Commission's Rules of Practice.

The reactor, to be built on a 300-acre site in a farming area about 4½ miles from Princeton, N. J., will operate at power levels up to 5,000 kilowatts to provide fast and thermal neutron fluxes and gamma rays for a variety of experimental applications. Its operation will be under direction of a university not yet selected.

Ownership of the reactor eventually will be shared by a group of industrial concerns to be associated under the name Industrial Reactor Laboratories, Inc. AMF Atomics will build the reactor, and

application for the construction permit was made in its name so that design and construction work may proceed. The company has indicated that it will apply later for transfer of the permit to the new corporation.

The reactor will be similar to the bulk shield test facility which has been in operation at the Commission's Oak Ridge National Laboratory, Oak Ridge, Tenn., since early 1951. The major difference, as indicated in the company's application, is the addition of a stall at one end of the reactor pool and division of the pool into two areas by use of a partition and movable gate. The stall will contain various beam holes, a dry irradiation chamber, and a thermal column for experimental use. Built into the far end of the pool will be a dry irradiation chamber using spent fuel elements from the reactor as a gamma ray source.

The reactor, housed in a gas tight area in a laboratory building, will be equipped with a variety of automatic safety devices. Shielding will be provided by water, lead, iron structural concrete, and barytes (high density concrete) at various locations.

The AMF Atomics estimates that the reactor will be completed at the earliest by March 1957, and by December 1957 at the latest. Upon satisfactory completion of the reactor and the filing by the company of a final hazards summary report giving reasonable assurance that the reactor can be operated without endangering the health and safety of the public, the permit will be converted to a 20-year license to operate the reactor.

Simultaneously with issuance of the construction permit, the Commission will allocate 63.8 kilograms of contained uranium 235 for use as reactor fuel over the period of the license. This is a net figure—transfers of U–235 from the Commission to AMF Atomics, less returns to the Commission of U–235 in spent fuel elements.

Attached are copies of the notice published in the Federal Register and of a memorandum describing the reactor and summarizing the principal factors considered in reviewing the application.

B. NOTICE OF INTENT ISSUED BY AEC CONCERNING PROPOSED ISSUANCE OF CONSTRUCTION PERMIT UNLESS HEARING REQUESTED

ATOMIC ENERGY COMMISSION

(Docket No. F–17)

NOTICE OF PROPOSED ISSUANCE OF CONSTRUCTION PERMIT TO AMF ATOMICS, INC.

Please take notice that the Atomic Energy Commission proposes to issue a construction permit to AMF Atomics, Inc., substantially in the form set forth below unless within 15 days after publication in the Federal Register a request for a formal hearing is filed with the Commission in the manner prescribed by Section 2.102 (b) of the Commission's Rules of Practice (10 CFR 2). There is annexed a Memorandum submitted by the Division of Civilian Application which summarizes the principal features of the proposed reactor and the principal factors considered in reviewing the application for a

license. For further details see the application for license at the Commission's Public Document Room, 1717 H Street NW., Washington, D. C.

CONSTRUCTION PERMIT, NO. CPRR–7

AMF Atomics, Inc., New York, 16 New York (hereinafter "AMF Atomics") on March 8, 1956, filed its application, docketed F–17, for a Class 104 license, defined in Section 50.21 of Part 50, "Licensing of Production and Utilization Facilities," Title 10, Chapter 1, CFR, to construct and operate a nuclear reactor (hereinafter "the reactor"). Supplements to the application were filed on July 10, 1956 and September 17, 1956. Reference to "the application" herein will be to the original application as supplemented.

The Atomic Energy Commission (hereinafter "the Commission") has found that:

A. The reactor will be a utilization facility as defined in the Commission's regulations contained in Title 10, Chapter 1, CFR, Part 50, "Licensing of Production and Utilization Facilities."

B. AMF Atomics proposes to utilize the reactor in the conduct of research and development activities of the types specified in Section 31 of the Atomic Energy Act of 1954.

C. AMF Atomics is financially qualified to construct and operate the reactor in accordance with the regulations contained in Title 10, Chapter 1, C. F. R.; to assume financial responsibility for the payment of Commission charges for special nuclear material and to undertake and carry out the proposed use of such material for a resonable period of time.

D. AMF Atomics is technically qualified to design and construct the reactor.

E. AMF Atomics has submitted sufficient information to provide reasonable assurance that a reactor of the type proposed can be constructed and operated at the proposed location without undue risk to the health and safety of the public and that additional information required to complete its application will be supplied.

F. The issuance of a construction permit to AMF Atomics will not be inimical to the common defense and security and to the health and safety of the public.

Pursuant to the Atomic Energy Act of 1954 and Title 10, C. F. R., Chapter 1, Part 50, "Licensing of Production and Utilization Facilities", the Commission hereby issues a construction permit to AMF Atomics to construct the reactor as a utilization facility. This permit shall be deemed to contain and be subject to the conditions specified in Sections 50.54 and 50.55 of said regulations; is subject to all applicable provisions of the Atomic Energy Act of 1954 and rules, regulations and orders of the Commission now or hereafter in effect; and is subject to any additional conditions specified or incorporated below.

A. The earliest date for the completion of the reactor is March 1, 1957. The latest date for completion of the reactor is December 31, 1957. The term "completion date" as used herein means the date on which construction of the reactor is completed, except for the introduction of the fuel material.

B. The site proposed for the location of the reactor is the location in Plainsboro Township, Middlesex County, New Jersey,

specified in the "Hazards Summary Report" dated June 1956, submitted by AMF Atomics as part of its license application.

C. The type of facility authorized for construction is a "pool" type research reactor designed to operate at a thermal power level of 5,000 kilowatts, as described in the license application.

This permit is subject to submittal by AMF Atomics to the Commission (by proposed amendment of the application of additional information required to complete its Hazards Summary Report and a finding by the Commission that the final design provides reasonable assurance that the health and safety of the public will not be endangered by operation of the reactor in accordance with the specified procedures.

Upon completion (as defined in Paragraph A above) of the construction of the facility in accordance with the terms and conditions of this permit, upon the filing of any additional information needed to bring the original application up to date, and upon finding that the facility authorized has been constructed in conformity with the application as amended and in conformity with the provisions of the Atomic Energy Act of 1954 and of the rules and regulations of the Commission, and in the absence of any good cause being shown to the Commission why the granting of a license would not be in accordance with the provisions of the Act, the Commission will issue a Class 104 license to AMF Atomics pursuant to Section 104 c. of the Atomic Energy Act of 1954, which license shall expire twenty (20) years after the date of this construction permit.

Pursuant to Section 50.60 of the regulations in Title 10, Chapter 1, CFR, Part 50, the Commission has allocated to AMF Atomics, for use in the operation of the reactor, 63.8 kilograms of uranium 235 contained in uranium at the isotopic ratios specified in AMF Atomics' application. Estimated schedules of special nuclear material transfers to AMF Atomics and returns to the Commission are contained in Appendix A which is attached hereto. Deliveries by the Commission to AMF Atomics in accordance with schedule 1 of Appendix A will be conditioned upon AMF Atomics' return to the Commission of special nuclear material substantially in accordance with schedule 2 of Appendix A.

FOR THE ATOMIC ENERGY COMMISSION,

H. L. PRICE,
Director, Division of Civilian Application.

Attachment: Appendix A.
Dated at Washington, D. C., this 19th day of December 1956.

C. MEMORANDUM ISSUED BY AEC DESCRIBED PROPOSED RESEARCH REACTOR

MEMORANDUM

PART I—DESCRIPTION OF THE REACTOR

In its license application, AMF Atomics, Inc., described a reactor which it proposes to build and operate at a site four miles northeast of Princeton, New Jersey. The proposed facility is a five megawatt pool-type reactor moderated, reflected and cooled by light water. The

core is immersed in a two section concrete pool filled with water. One of the sections of the pool contains an experimental stall into which beam tubes and other experimental facilities converge. The other section is an open area suitable for bulk irradiations of materials with neutrons or gamma rays.

The reactor control system consists of five aluminum clad boron carbide shim-safety rods having an average reactivity control value of 2.2 percent each and one stainless steel regulatory rod with a control value of 0.6 percent, suspended from drives mounted on the reactor bridge.

Each reactor fuel element consists of an assembly of eighteen curved aluminum-clad uranium-aluminum alloy plates containing 196 grams of fully enriched U–235. These elements are arranged in a standard grid structure having a 12″ x 18″ cross-section. The core, which is 24″ high, is designed so that as many as 54 fuel elements, arranged in a 6 x 9 array, could be inserted in the reactor. The proposed loading, however, calls for the use of only 24 elements containing approximately 4.1 kg. of U–235.

The applicant's calculations indicate that 2.8 kg. will be needed to satisfy the basic critical mass requirements. The additional 1.3 kg. will be charged to the reactor to provide reactivity 9.1 percent above that required for cold clean criticality. The applicant states that this amount of reactivity is needed to overcome the following factors which lower the initial reactivity as the reactor is operated:

(1) 0.22 percent—temperature increase.
(2) 3.4 percent—xenon buildup.
(3) 1.9 percent—the six beam tubes.
(4) 1.5 percent—neutron absorbing experiments.
(5) 0.65 percent—burnout of U–235.
(6) 1.1 percent—control requirements.
(7) 1.1 percent—various other effects.

The applicant's proposed total control value for the shim-safety rods of about 11 percent is great enough to control a reactor having 9.1 percent excess reactivity.

Heat will be removed from the reactor core by normal convection of the pool water when the reactor is operated at low powers, and by forced convection when it is operated at high powers.

The reactor is to be housed in a vapor container consisting of a reinforced concrete parabolic shell structure 80 feet tall and 60 feet in diameter, said by the applicant to be capable of sustaining, without rupture, an internal excess pressure of 0.442 pounds per square inch. The applicant states that at this pressure the leakage rate will not exceed 2.5 percent of the container volume per day. A wing of the building adjacent to the containment structure will contain assorted laboratories and supporting facilities.

The site for this facility is a 300-acre tract located in Plainsboro, Township, in southwest Middlesex County, New Jersey, between Trenton and New Brunswick. Princeton, the nearest major populated center, having approximately 13,000 residents, lies four and one-half miles west of the site. The general area has a low population density. The boundary of the property controlled by the applicant is 1,300 feet from the reactor at the nearest point. Presently, there are no residents within 3,600 feet of the reactor; 85 are within one mile, 710 within two miles, and approximately 25,000 within five miles.

PART II—HAZARD ANALYSIS

General considerations.—There is an extensive body of relevant knowledge and successful operating experience for reactors of the type under consideration. Pool-type reactors using fuel elements and having core arrangements generally similar to those proposed for this reactor have been safely and successfully operated for several years. The power levels of these reactors are in the 10–100 kilowatt range for the Geneva demonstration reactor and the Penn State reactors, the few megawatt range for the Oak Ridge reactors, and the many megawatt range for the MTR.

While it is true that none of these previously built and operated units is exactly duplicated in the design of the proposed reactor, and while there are certain features proposed for this reactor, such as the fairly great flexibility occasioned by the large number of available fuel positions (54), which will require special attention prior to the issuance of operational approval, the stability and predictability of pool-type reactors, which has been demonstrated by the extensive successful operation of these reactors, leaves no reason to doubt that an adequately engineered and carefully constructed reactor of the type proposed by the applicant should be capable of safe operation.

Temperature coefficient of reactivity.—One feature of importance in these considerations is the characteristics of negative temperature coefficient shared by this reactor in common with others of this type. The negative temperature coefficient contributes to both the static stability and the dynamic stability of the reactor. A reactor possesses static stability in changing temperatures if it decreases in reactivity with an increase in temperature (negative temperature coefficient) i. e., if for any cause there is a rise of temperature within the reactor, the effective multiplication factor, or its ability to sustain a chain reaction will then tend to decrease. Consequently, the rate of heat production or power level will also decrease, tending to offset the rise in temperature. Conversely, if the temperature coefficient were positive, the reactor would be unstable to temperature changes. AMF has presented results of calculations which indicate that the proposed reactor possesses a relatively strong negative temperature coefficient of reactivity, insuring stability in the event of probable types of power excursions. These results are consistent with values measured in existing MTR type reactors. The extent of density changes in the coolant or moderator brought about by changes in temperature have a strong influence on the sign and magnitude of the overall temperature coefficient. However, density changes do not respond to temperature variations instantaneously, and as a result oscillations may develop in the neutron flux and reactor power. If such oscillations are rapidly damped out because of the inherent features of the reactor, the reactor is said to have good dynamic stability. Although this phenomenon has not been completely analyzed with respect to the proposed reactor, its general aspects should not be significantly different from satisfactory observations of this characteristic made in existing reactors having similar nuclear characteristics.

Containment of maximum credible accident.—We are not at this time ready to accept the applicant's assertion that the maximum accident against which the strength of the containment structure must be evaluated is one which would result from a rapid step insertion of 3.3 percent excess reactivity, with a consequent energy release, as

shown by the BORAX experiments, of 135 MW–SEC. A restudy of all potential accidents, including those that could result from slow additions of reactivity, taking into consideration the possibility of metal-water reactions, must be made before this point can be finally resolved. Further, since the applicant's definition of the maximum credible accident has not been accepted, and since the structural design of the containment building has not been presented, no attempt can be made to examine the ability of the building to remain unbreached by the energy release from such an accident.

However, based on rather extensive knowledge and experience with pool-type reactors, we are satisfied that when the maximum credible accident has been defined it will be possible to design a containment structure in such a way that it will not be breached by the energy release resulting from such an accident. The applicant has stated that a sudden insertion of reactivity is the worst conceivable accident. While, as previously pointed out, we are not yet ready to agree that this is the case, we are satisfied that proper design specifications and operational procedures can make the occurrence of accidents of this nature highly improbable.

As to the proposed leakage rate, if the containment building is not breached by the violence of an incident, if the fission products are released into the containment building by the incident in amounts not exceeding those postulated by the applicant, and if the dilution and filtration procedures used are as effective as indicated, the radiation level which would exist at the boundary of the site nearest the reactor would not exceed that permissible for the public in general. Thus, if the above-mentioned conditions are met, the proposed leakage rate of 2.5 percent per day at a differential pressure of 0.442 p. s. i. as a design goal would be acceptable.

Possibility of development of additional potential safety hazards.—While the safety problems of pool-type reactors seem to be fairly well understood, as the results of continuing experimental work on water moderated, reflected and cooled reactors become available, and as more operating experience on such reactors is developed, new information may point out potential safety hazards which are not recognized today.

In this connection, quite recent experiments have indicated that under certain conditions unstable reactor oscillations may occur. The full implication of these instabilities on the potential hazard of reactors of this type is not yet known. See copy of letters to licensees and license applicants dated October 18, 1956, on file in the AEC Public Document Room.

Summary.—The application has been reviewed at this time only for the purpose of determining whether, based on information contained in the application and any amendments thereto, and taking into account the wealth of experience which has been gained from the operation of reactors of this general type, there is reasonable assurance that a facility of the general type proposed can be constructed and operated at the proposed location without undue risk to the health and safety of the public. In making this determination, it is not necessary to give detailed consideration to the adequacy or acceptability of particular design features or specification of the reactor and its associated equipment, to the proposed operating procedures, or to the safety of the reactor for specific types of research and development

programs. For this reason, no attempt has been made to review and evaluate these factors at this time.

Prior to the time when the reactor is allowed to go critical, a complete review and evaluation of (1) the hazard aspects of the reactor and containment design; (2) the operating and supervisory procedures; (3) the particular research and development programs to be carried out; and (4) the emergency plans, must demonstrate that the issuance of a license to operate the reactor will not be inimical to the common defense and security or to the health and safety of the public.

The applicant may at such times as he deems appropriate request amendment of his construction permit to include findings with regard to particular technical design features or specifications of the reactor and its associated equipment and proposed operating procedures.

PART III—TECHNICAL QUALIFICATIONS OF APPLICANT

American Machine and Foundry Company, parent of AMF Atomics and its predecessor in the atomic field, has acted as a major subcontractor for the Manhattan Engineering District and the Atomic Energy Commission's Savannah River Project. AMF Atomics was the contractor for the construction of a research reactor for the Battelle Memorial Institute of Columbus, Ohio, with respect to which a license to operate was issued by the Commission on August 10, 1956, License No. R–4.

PART IV—FINANCIAL QUALIFICATIONS OF APPLICANT

AMF Atomics estimates that the initial cost of the proposed reactor will be approximately $2,700,000 and the annual operating budget will be about $500,000.

The American Machine and Foundry Company has informed the Commission that in the event AMF Atomics is unable to obtain financing enabling it to undertake and carry through the construction and operation specified in the AMF Atomics, Inc., application, American Machine and Foundry Company will provide AMF Atomics with sufficient funds to carry forward the construction and operation of the reactor.

At September 30, 1955, the parent company had $77 million in current assets compared with $31 million in current liabilities, or a current ratio of nearly 2.5. Total assets amounted to $129 million, of which stockholders' equity accounted for $59 million or roughly 46 percent. Net income (after taxes) amounted to between $4 and $5 million each year since 1948 with one exception due to a lengthy labor strike. The company's customers are engaged in many different lines of endeavor. Therefore, its earnings do not depend on the economic conditions prevailing in any single industry.

PART V—CONCLUSIONS

Based upon the above considerations, it is concluded that:

(*a*) There is reasonable assurance that a facility of the general type proposed can be constructed and operated at the proposed site without undue risk to the health and safety of the public.

(*b*) The applicant is technically and financially qualified to engage in the proposed activities.

For the Division of Civilian Application:

H. L. PRICE, *Director.*

APPENDIX 15

REQUIREMENTS OF HEARINGS IN ADMINISTRATIVE ADJUDICATION

By Prof. J. Forrester Davison

CONSTITUTIONAL LAW, AND APPLICABLE STATUTORY PROVISIONS

In *Munn* v. *Illinois*,[44] decided in 1876, the Supreme Court of the United States upheld the regulation of business affected with a public interest by legislative rule without requiring a hearing. But by 1886 the Court had shown the reverse trend (in *Stone* v. *Farmer's Loan and Trust Co.*)[45] and confirmed the change in *Chicago, Milwaukee and St. Paul R. R. Co.* v. *Minnesota*.[46] In the latter case it held that a State statute making final orders of a railway commission as to fair and reasonable rates, without any adjudicatory hearing in contested cases before the orders were effective, was unconstitutional as a violation of due process of law. That holding was generally followed in interstate regulation cases and is basic in administrative law to this day. The principle has been extended to many other fields of administrative control where the interests to be protected are interests of both property and personal status or liberty.

Required hearings, however, may be held after the orders have been determined and written, but before the time they will be effective, as, for example, *United States* v. *Illinois Central Railroad Co.*[47]

The first general legislation concerning the requirement of hearings in administrative adjudication was the Administrative Procedure Act of 1946.[48] It followed the position of a majority of the Attorney General's committee, which in 1941 had reported [49] on the administrative law procedures of the 1930's that had drawn criticism from the members of the American Bar Association. The act made the smallest basic changes possible in the law as it then stood, being a combination of individual agency statutes and the interpretations thereof by the Supreme Court of the United States in the light of due process of law and the doctrines of the separation of powers. While providing for two basic procedures, one for rulemaking and the other for adjudication, the act did not give any clear-cut guide as to which was required in any given case, nor did it determine when a hearing on the record, with the elements of an adversary adjudicatory procedure, should be held.

It left that requirement to existing statutes and court interpretation, but listed six exceptions to this requirement:

> In every case of adjudication required by statute to be determined on the record after opportunity for an agency hear-

[44] *Munn* v. *Illinois*, 94 U. S. 113 (1876).
[45] *Stone* v. *Farmers Loan & Trust Co.*, 116 U. S. 307 (1886).
[46] *Chicago, M. and St. P. Railway Co.* v. *Minnesota*, 134 U. S. 457 (1890).
[47] *United States* v. *Illinois Central R. R.*, 291 U. S. 457 (1934).
[48] 60 Stat. 237, 5 U. S. C. secs. 1001–1011 (1952).
[49] Reprinted in S. Doc. No. 8, 77th Cong., 1st sess. (1941).

ing, except to the extent that there is involved (1) any matter subject to a subsequent trial of the law and facts de novo in any court; (2) the selection or tenure of an officer or employee of the United States other than examiners appointed pursuant to section 1010 of this title; (3) proceedings in which decisions rest solely on inspections, tests, or elections; (4) the conduct of military, naval, or foreign affairs functions; (5) cases in which an agency is acting as an agent for a court; and (6) the certification of employee representatives.[50]

This preamble to section 5 of the Administrative Procedure Act is followed in the rest of the section by certain procedural rules and safeguards including the prohibition of the much criticized judge-prosecutor combination function in administrative hearings, but even this last restraint is not required for applications for initial licenses and proceedings involving the validity or application of rates, facilities or practices of public utilities or carriers; nor does it apply to the top agency and its membership.

It is very significant that in the light of this summary of the law, neither the Administrative Procedure Act, which is made applicable to licensing procedures for civilian use of atomic energy (including construction permits), nor the Atomic Energy Act of 1954,[51] has any requirement that there shall be hearings on the record when applications for licenses are received. While the granting of construction permits under the Atomic Energy Act has been likened to the issuance of initial licenses because they are more like policy or rulemaking, than a form of adjudication, and no hearing would be required, the AEC has provided in its rules of practice for hearings to be held under certain conditions.

The Senate committee report on the Administrative Procedure Act of 1946 pointed out the need for hearings even in initial licensing cases, when the proceeding may have aspects accusatory in form or involve sharply controverted factual issues.[52]

When construction permits or operating licenses are required for a section 103 [53] (commercial) type of production or utilization facility, section 182 (b) [54] provides that a notice in writing must be given to regulatory agencies having jurisdiction, to municipalities, private utilities, public bodies, and cooperatives within transmission distance authorized to engage in the distribution of electric energy. And the Commission may not act on such applications until it has published notice of them in the Federal Register once each week for 4 consecutive weeks and until 4 weeks after the last notice.

The procedures of section 9 (b) of the Administrative Procedure Act are made applicable to the revocation of AEC licenses and are of a formal nature.[55] Subsection (a) of section 189 [56] also provides for a hearing at the request of any person who may be affected by any proceeding for the granting, suspending, revoking, or amending any license or construction permit, or application to transfer control, and

[50] 5 U. S. C. sec. 1004 (1952).
[51] 68 Stat. 919, 42 U. S. C. A. secs. 2011–2281 (1956).
[52] Reprinted in S. Doc. No. 248, 79th Cong., 2d sess., at p. 262 (1946).
[53] For text of sec. 103 see appendix 1.
[54] For text of sec. 182 (b) see appendix 1.
[55] Sec. 186 (b) Atomic Energy Act of 1954.
(b) The Commission shall follow the provisions of section 9 (b) of the Administrative Procedure Act in revoking any license."
[56] For text of sec. 189 (a) see appendix 1.

in any proceeding for the issuance or modification of rules and regulations dealing with the activities of licensees.

The provisions concerning hearings were discussed in the congressional debate leading to amendment of the Atomic Energy Act in 1954,[57] but it was decided to require only opportunity for hearing, as specified by section 189a, rather than required hearings on all applications.

The effectiveness of the optional hearing provision of section 189a will depend in large measure upon the amount of notice and the information contained in the notice, so that the public, possible competitors, and persons specially affected by the proposals will receive the detailed guidance they need to determine whether to request a hearing or to intervene in proceedings already contemplated. In the cases of applications for construction permits and initial licenses, other than matters covered by section 182 (b) and by revocation proceedings, the outside persons may be unaware until quite late in the proceedings of the significance to be attached thereto.

At the present time the practical importance of adequate notice is great, concerning applications for construction permits for facilities under section 104 [58] for research and development facilities for practical demonstration and pure research purposes. There is also widespread public interest in all these licenses whether for construction or operating purposes. More attention should now be given to the need for increased statutory requirements for notice and mandatory hearings. For the rationale of the two stages of construction permits and operating licenses is that once an undertaking gets underway and much money is expended in the construction phase, the pressures to grant a final operating license are impossible to resist even in the interest of public health and safety.

AEC REGULATIONS

The Commission's rules of practice [59] provide for three types of proceedings to be carried out on receipt of applications for construction permits or licenses and their amendment or renewal.

> (1) (a) The AEC will, upon request of the applicant or an intervener, and may on its own initiative, direct the holding of a formal hearing prior to taking action on the application.
>
> (2) If no prior formal hearing has been held and no notice of proposed action has been served as provided in paragraph (b) of this section, AEC will direct the holding of a formal hearing upon receipt of a request therefor from the applicant or an intervener within 30 days after the issuance of a license or other approval or a notice of denial.
>
> (3) (b) In such cases as it deems appropriate, AEC may cause to be served upon the applicant, and published, a notice of proposed action upon his application and shall cause copies thereof to be served upon interveners or others entitled to or requesting notification. The notice shall state the terms of the proposed action. If a formal hearing has not been held prior to issuance of the notice, AEC will direct the holding of a formal hearing upon the request of the

[57] See discussion in legislative history, appendix 2.
[58] For text of sec. 104 see appendix 1.
[59] 10 C. F. R. sec. 2.102 (a), 21 F. R. 805 (1956).

applicant or an intervener received within 15 days following the service of the notice. [Numbering added.]

The public hearings underway at this time on the application for a construction permit made by the P. R. D. Co. of Detroit, Mich., the first the Commission has held; are an example of type (2) above. The recent action of the Commission in giving notice of the issuance of a proposed construction permit for the AMF Atomics, Inc., near Princeton, N. J., is an example of the procedure under type (3) above. This last notice is accompanied by a lengthy report summarizing the hazards involved in the reactor planned for in the application and an indication of what solutions must be worked out and additional information filed to obtain the construction permit. Since the former case turns largely on the factor of adequate safety controls to reduce the hazards involved in the fast breeder reactor planned for Monroe, Mich., and the problem of letting interested parties know the extent and nature of these hazards, it is significant that the AEC now contemplates giving notice of all the hazard factors along with the notice of proposed action on the application for the construction permit. Thereby it provides detailed issues on which interested parties may seek to gain the status of interveners and parties in interest. It is a recognition of the importance at this stage of the most controversial issues as to ultimate licensing and operation of the reactor, which must be worked out and solved if possible (or to the extent possible), before the construction permit is granted.

Great sums of money must be invested in the large scale developmental power reactors. As much as $70 million of privately raised capital may be involved in a large demonstration reactor and Congress and the Commission were aware of this problem in dealing with construction permits as indicated by the language of section 185 which follows so closely the language of section 319 of the Federal Communications Act of 1952 in its concern for public interest and safety. The pressure to operate a newly constructed plant, in which such sums of money have been invested, has proven to be almost irresistible by the experience in the radio field when much smaller amounts of money were involved.

Comparative Study of Other Federal Regulatory Agencies

1. Federal Communications Commission

While Congress followed very closely the language of section 319[60] of the Federal Communications Act in writing section 185[61] of the Atomic Energy Act of 1954 it did give the AEC more discretion than the FCC in reviewing the final facility once constructed, and deciding at that stage whether or not any changed conditions affecting the public interest or the interests of national defense made it unwise to grant the final operating license. The language of section 319 of the Federal

[60] 47 U. S. C. sec. 319 (c) (Federal Communications Commission, 1952):

"(c) Upon the completion of any station for the construction or continued construction of which a permit has been granted, and upon it being made to appear to the Commission that all the terms, conditions, and obligations set forth in the application and permit have been fully met, and that no cause or circumstance arising or first coming to the knowledge of the Commission since the granting of the permit would, in the judgment of the Commission, make the operation of such station against the public interest, the Commission shall issue a license to the lawful holder of said permit for the operation of said station. Said license shall conform generally to the terms of said permit. The provisions of section 309 (a)–(c) of this title shall not apply with respect to any station license the issuance of which is provided for and governed by the provisions of this subsection."

[61] 42 U. S. C. A., sec. 2234 (sec. 185—Atomic Energy Act of 1954) (1956), reprinted in appendix 1, supra.

Communications Act seems to make almost mandatory the granting of the final license and also bypasses the elaborate procedure of notice, interventions, and protests applicable to all other licenses and to the construction permit itself.

It is a legal axiom that the most effective method to determine the relevant issues in a dispute and to solve the problems presented by them, is to hold a public hearing of an adversary nature. The hearing will permit the parties affected to receive adequate notice of the issues and to have an opportunity on the record to present their claims for recognition and adjustment supported by evidence if necessary.[62]

The FCC amendments of 1952 attempt to provide a form of public hearing to achieve the best results. A consideration of them is in order here.

Sections 308 and 309 of the Federal Communications Act provide for the granting of construction permits and station licenses and the procedures to be followed on applications therefor. These procedures were changed in 1952 to provide for greater formality and to give an opportunity to as many applicants as possible to be heard at the same time on the issue of the same broadcast band applications.

The reasons which led to the 1952 (McFarland) amendments are very complicated and the requirements they embodied are detailed and exacting. Under specified conditions the FCC must give notices to applicants, known parties in interest and other parties who may wish to join as persons affected on contested applications and denials. In addition in the case of uncontested grants there is provision for a new protest procedure by which parties affected may appear and require the reopening of licenses already granted.[63]

This trend carried forward an interpretation by the Supreme Court of the United States in the case of *Ashbacker Radio Corp.* v. *Federal*

[62] Frankfurter, J. concurring in *Joint Anti-Fascist Committee* v. *McGrath*, 341 U. S. 123, at pp. 170–172.

"* * *, a democratic government must therefore practice fairness; and fairness can rarely be obtained by secret, one-sided determination of facts decisive of rights.

"An opportunity to be heard may not seem vital when an issue relates only to technical questions susceptible of demonstrable proof on which evidence is not likely to be overlooked and argument on the meaning and worth of conflicting and cloudy data not apt to be helpful. But in other situations an admonition of Mr. Justice Holmes becomes relevant. 'One has to remember that when one's interest is keenly excited evidence gathers from all sides around the magnetic point * * *.'" ("Mr. Justice Holmes made this remark in a letter to Mr. Arthur Garfield Hayes in 1928. See Bent Justice Oliver Wendell Holmes, 312," fn. 18, p. 171.)

"* * * That a conclusion satisfied one's private conscience does not attest its reliability. The validity and moral authority of a conclusion largely depend on the mode by which it was reached. Secrecy is not congenial to truth-seeking and self-righteousness gives too slender an assurance of rightness. No better instrument has been devised for arriving at truth than to give a person in jeopardy of serious loss notice of the case against him and opportunity to meet it. Nor has a better way been found for generating the feeling, so important to a popular government, that justice has been done." (Citing the writings and speeches of Daniel Webster, 5, p. 163.)

[63] Subsec. (a) of sec. 309 as amended provides that, if upon examination of an application, the Commission shall find that the public interest, convenience, and necessity would be served by the granting thereof, it shall grant such application. However, new and special provisions will apply in those cases in which it finds itself unable to grant an application without first holding a hearing.

Subsec. (b) provides that if upon examination of an application the Commission is unable to make the finding that the public interest, convenience and necessity would be served by granting the application, it shall forthwith notify the applicant and other known parties in interest of the grounds and reasons for its inability to make such finding. Such notice, which must precede formal designation for a hearing, must advise the applicant and all other known parties in interest of all objections made to the application as well as the sourse and nature of such objections. The applicant will be given an opportunity to reply. After considering the reply if the Commission is still unable to grant the application, it must formally designate the application for hearing on the grounds or reasons then obtaining and notify the applicant and all other known parties in interest of such action as to the grounds and reasons therefor, and specify with particularity the matters and things in issue. Parties in interest who were not notified by the Commission may acquire, upon filing a petition for intervention, the status of parties to the proceeding, and shall participate in any subsequent full hearing as full parties. In that hearing the burden of proceeding with the introduction of evidence upon any issue specified by the Commission as well as the burden of proof upon all such issues shall be upon the applicant.

Subsec. (c) deals with protests in cases where the Commission has granted an application without a hearing under subsec. (a). In any such case, the grant of the application shall remain subject to protest by any party in interest for a period of 30 days, and the protesting party may request a hearing on the application which was granted. The protest must contain allegations of fact to show that the protestant is a party in interest, and must specify the facts, matters and things relied upon. The Commission within 30 days (1954 amendment) from the filing of the protest must enter a finding as to whether the protest meets the above requirements and designate the matter for hearing on the issues specified in the protest, except with respect to such matters, and after oral hearing, the Commission decides would present no grounds for setting aside

Communications Commission,[64] which was based on the legislation in effect before 1952. The Court therein decided that when 2 mutually exclusive applications were pending, having been filed at 2 different times beforehand, the Commission could not grant the first without a hearing, and then later schedule a hearing on the second and justify this procedure on the ground that the then law only required it to hold hearings when it was determined that the Commission was unable to grant the license on the application alone.

The construction permit procedure involved hearings, notices and protest procedures, but section 319, from which section 185 of the 1954 Atomic Energy Act is drawn, exempts the final license from these requirements. The Communications Commission was directed to issue a station license upon the completion of a station for the construction of which a permit had been granted. The Commission merely had to determine that the terms, conditions and obligations set forth in the application and construction permit had been fully met, and that no cause or circumstance since the granting of the permit, would in the judgment of the Commission make the operation of the station against the public interest.

The time consumed in all these various stages of the hearings on construction permits and all but initial operating licenses has greatly delayed the decisions and slowed up the processes of the FCC at a critical period in their TV licensing programs. Purely nuisance suits and interventions have not been uncommon and the ultimate decision has not benefited. The legislative history [65] indicates that all these formalities and the consequent delays were in part the result of public and professional dissatisfaction with the limited amount of information made available to the public and to the professions as to what actually took place in any given broadcast application proceedings, until the order was announced and tested in the courts. Consequently, Congress sought to give a wider participation in the knowledge and processes of the Commission by introducing in accordance with current trends a greater degree of formality into its proceedings, sometimes likened to a judicialization of administrative procedure. Although these provisions requiring notice and hearings were not included in the 1954 Atomic Energy Act [66] when it adopted provisions of FCC section 319 on construction permits, a consideration of the reasons behind the two acts and the conditions in which the AEC Civilian Application Divi-

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the grant even if the facts are later proven. It may therefore also redraft the protestant's issues and specify such further issues for hearing in addition to adopting the issues set forth in the protest.

The hearings on the specified issues are to follow the procedures of subsec. (b), and the burden of going ahead and of proof is on the protestant on issues not adopted by or specified by the Commission. The hearings on the protests are to be expedited by the Commission and under the 1956 amendment the effective date of the Commission's action on the grant protested is to be postponed to the decision date after the hearings, unless the authorization involved is necessary to the maintenance or conduct of an existing service, or unless the Commission finds for reasons it sets forth that the public interest requires the grant to remain in effect, in which case the original authorization is to be valid until the Commission's final decision is announced.

[64] The Supreme Court of the United States decided in the case of *Ashbacker Radio Corp.* v. *F. C. C.*, 326 U. S. 327 (1945), that when 2 mutually conflicting applications were pending, involving technical interferences, the Commission could not grant 1 license without a hearing, and then at a later time schedule a hearing on the second application, giving as the explanation of the hearing, that it was required to hold a hearing only when it could not grant a license. Economic conflicts might also make one license only available. The Court held that public not private interest dictated its decisions, but since Congress had in the statute granted applicants a right to a hearing, the grant of a license to one without a hearing to both applicants deprives the loser of the opportunity provided by statute. The loser in this case had both a technical and an economic conflict to be covered by the hearing.

[65] See Wall and Jacob, *Communications Act Amendments, 1952, Clarity or Ambiguity*, 41 Geo. L. J. 135 (1953), subheading "Hearings on Applications and the Protest Procedure," pp. 145–151.

See also hearings before House Committee on Interstate and Foreign Commerce on 1952 Communications Act Amendments 82d Cong., 1st sess. 95 (1951). See also Commissioner Jones op. cit. supra pp. 142–145. Commissioner Hyde dissenting, op. cit. supra. 231 et seq. Statement of Frank Robertson, chairman, legislative committee, Federal Communications Bar Association. op. cit. supra. pp. 243–299.

[66] See Legislative History on Atomic Energy Act of 1954, appendix 2.

sion operates is of value in determining whether existing procedure is adequate.

2. Civil Aeronautics Board and Civil Aeronautics Administration

While the statutory pattern of the regulation and control of civilian aviation does not have any direct influence on the Atomic Energy Act of 1954, the roles of the Civil Aeronautics Board and of the Civil Aeronautics Administration and their procedures do provide some illuminating analogies. Economic control of commercial airlines is in the hands of the CAB with its discretionary authority to grant certificates of convenience and necessity for an air carrier to serve between designated points. The Board receives applications, makes investigations and holds hearings. When an application is received the Board gives public notice thereof by posting a notice of the application and any interested party may file a protest or memorandum for or against the issuance of the certificate. The application must be set for public hearing and the Board is to dispose of it as speedily as possible.[67] The Board also writes and promulgates economic regulations on this subject [68] and on the matter of air safety for aircraft construction and operation,[69] and adjudicates matters arising under any of its regulations which have been made the subject of formal proceedings by the Administrator of the Civil Aeronautics Administration in enforcing the Board regulations.[70] Under the Atomic Energy Act of 1954 the regulation and control of the economic aspect of power production by atomic reactors and its distribution would be left to the State and Federal regulatory agencies having jurisdiction.[71]

The analogy to the AEC functions is rather in the functions and operations of the Civil Aeronautics Administration, formerly a separate agency which is now in the Department of Commerce. It determines the "type" of aircraft and the actual craft which may be used on commercial airlines already certificated by the CAB. It also passes on the location and construction and operations of civil airports.

The Administration determines the types of planes which come within the performance and safety ratings in conformity with requirements written by the CAB.[72] It first issues a "type" license if satisfied by the prototype aircraft. This determination is the most important

[67] 49 U. S. C., secs. 481-482 (1952).
[68] 49 U. S. C., sec. 487 (1952).
[69] 49 U. S. C., sec. 551 (1952).
[70] 49 U. S. C., sec. 559 (1952).
[71] Atomic Energy Act of 1954, secs. 271, 272. 42 U. S. C. A., secs. 2018, 2019 (1956).
"Sec. 271. Agency Jurisdiction. Nothing in this Act shall be construed to affect the authority or regulations of any Federal, State, or local agency with respect to the generation, sale, or transmission of electric power."
"Sec. 272. Applicability of Federal Power Act. Every licensee under this Act who holds a license from the Commission for a utilization or production facility for the generation of commercial electric energy under section 103 and who transmits such electric energy in interstate commerce or sells it at wholesale in interstate commerce shall be subject to the regulatory provisions of the Federal Power Act."
[72] 49 U. S. C. A. (1956), ch. 9, deals with Civil Aeronautics and is based on the Civil Aeronautics Act of 1938, 52 Stat. 977. Sec. 201 of that Act established a "Civil Aeronautics Authority" and an "Administrator." The functions vested in the Authority by secs. 751-757 of title 49 (expired); the functions of aircraft registration and of safety regulation described in subchs. V and VI of ch. 9, except the functions of prescribing standards, rules, and regulations and of suspending and revoking certificates after hearing; the function provided for by sec. 671 of this title; and the functions of appointing such officers and employees and of authorizing such expenditures and travel as may be necessary for the performance of all functions vested in the Administrator, were transferred from said "Civil Aeronautics Authority" to the "Administrator" by sec. 7 of the 1940 Reorganization Plan No. III effective June 30, 1940, 5 F. R. 2109, 54 Stat. 1233. Plan No. III also redesignated the "Administrator" as the "Administrator of Civil Aeronautics." By sec. 7 of Reorganization Plan No. IV, effective June 30, 1940, 5 F. R. 2451, 54 Stat. 1235, the "Civil Aeronautics Authority" and its functions, the Office of the Administrator of Civil Aeronautics and its functions, and the functions of the Air Safety Board were transferred to the Department of Commerce. The administration of the functions of the Administrator of Civil Aeronautics was placed under the direction, and supervision of the Secretary of Commerce.

hurdle to be overcome in getting equipment for air transport licensed. It compares in importance with the AEC "construction permit." Once a "type" has been accepted an authorization to produce it in quantities is granted generally as a matter of course to a well established manufacturer in a "production" certificate. Once produced these planes easily obtain an "airworthiness" certificate if they follow the certificates of types and productions.[73]

No hearing takes place on these applications as distinguished from the economic applications for certificates of convenience and necessity. The approved blueprints are moreover known generally only to the manufacturer or branches of the armed services which assisted the manufacturers in developing the original military models from which the approved aircraft is a civilian modification complying, by adaptations, to civilian standards of performance and safety factors. The original development and the civilian adaptation are often secret for defense and industrial reasons so far as design and specifications are involved and because of the defense factor much of the developmental cost has been made up by the Government procurement of the prototype planes. Other airline operators or manufacturers can only realize these subsidy benefits by purchasing surplus military craft or by purchasing used approved civilian craft. In the case of the military surplus they have to start without any guidance as to what modifications will earn approval for civilian operation, unless they can determine from examination of a used civilian plane they have already acquired. In this respect they are like manufacturers of atomic reactor equipment who have not had contract relations with the AEC until the AEC puts out for the industry enough information and design blueprints that these outsider manufacturers will be qualified to bid for and construct atomic reactors. The present information program of the AEC with its system of access permits seeks to achieve this result.

The CAA also contracts for beacons, landing signals, ground controlled approach and instrument landing systems, many of which it also seeks to develop by suitable contract assistance.[74] While the airlines and privately owned airports must buy much of this very expensive equipment, there is nevertheless a form of Government indirect subsidy in its development. The industry also benefits in part from the Government construction and operation of some airports and of safety beacons. The CAA also deals with the issuance [75] and control of pilots certificates.[76] These promotional and development functions of the CAA are similar to certain functions of the AEC where hearings are not required either.

3. Federal Power Commission

The Federal Power Commission has a related function in the control of rates charged for electric power sold in interstate commerce,[77] as well as the economic regulation of interstate natural-gas business,[78] similar to the economic controls of the CAB. It also has water-site

[73] 49 U. S. C. sec. 553 (1952).
[74] 49 U. S. C., sec. 452 (1952).
[75] 49 U. S. C., sec. 552 (1952).
[76] 49 U. S. C., sec. 559 (1952). Hearings are before the Civil Aeronautics Board initiated by the Administrator.
[77] Federal Power Act, subch. II, 16 U. S. C., sec. 824–824h (1952).
[78] Natural Gas Act, 15 U. S. C., sec. 717–717w (1952).

licensing functions[79] concerning the development, transmission or utilization of power across, along, from, or in any of the streams or other bodies of water over which Congress has jurisdiction to regulate.[80]

While hearings are not required by statute for the Federal Power Commission in the regulation of electric power sales in interstate commerce, or the granting of licenses as to water power sites, the standards of due process of law, as interpreted by courts, will dictate the need of hearings in adjudicatory procedures where conflicting interests appear.[81] The Power Commission rules of procedure provide for such hearings in both full length, and a "shortened" procedure.

The Natural Gas Act on the other hand does require the Commission to hold hearings on application for certificates of convenience and necessity concerning facilities for the transportation and sale of natural gas in interstate commerce.

Section 7 (c) (15 U. S. C., 717f (c)) of the Natural Gas Act provides that:

> No natural-gas company or person which will be a natural-gas company upon completion of any proposed construction or extension shall engage in the transportation or sale of natural gas, subject to the jurisdiction of the Commission, or undertake the construction or extension of any facilities therefor, or acquire or operate any such facilities or extensions thereof, unless there is in force with respect to such natural-gas company a certificate of public convenience and necessity issued by the Commission authorizing such acts or operations: * * *

Then follows a "grandfather clause" providing for mandatory authorization by certificate of route and facilities in operation on the effective date of the act. The section continues with the provision:

> In all other cases the Commission shall set the matter for hearing and shall give such reasonable notice of the hearing thereon to all interested persons as in its judgment may be necessary under rules and regulations to be prescribed by the Commission: and the application shall be decided in accordance with the procedure provided in subsection (e) of this section and such certificate shall be issued or denied accordingly:

There is a proviso for temporary certificates to be issued without notice or hearing in cases of emergency to assure maintenance of an

[79] Federal Power Act, subch. I, 16 U. S. C., sec. 797–823 (1952).

[80] 16 U. S. C., sec. 797 (e) (1952).

[81] 15 U. S. C., sec. 717f (c) (1952). The jurisdiction to regulate given by Congress is concerning the development, transmission, or utilization of power across, along, from, or in any of the streams or other bodies of water over which Congress has jurisdiction to regulate under its authority to regulate commerce with foreign nations or among several States or upon any part of the public lands and reservations of the United States and its Territories (title 16, U. S. C., sec. 797 (e).) By the same subsection it is provided that a license within any reservation shall be issued only after a finding by the Commission that the purpose for which the reservation was created is not harmed or interfered with. Any license affecting any of the navigable waters of the United States cannot be issued until the plans of the dam or other structure have been approved by the Chief of Engineers, U. S. Army and the Secretary of the Army. It is provided by subsec. (e) of sec. 797 of title 16, U. S. C., that when the application for a license has not been preceded by a preliminary permit, under subsec. (f), of the same section, to get authority to obtain information necessary for the application, notice shall be given as required in subsec. (f) in writing, to any State or municipality, likely to be interested in or affected by the application, and in addition notice of the application must be published once each week for 4 weeks in a publication published in the county or counties which are in any way affected thereby as to project or lands.

This latter provision is similar to the notice requirement of sec. 182 (b) of the Atomic Energy Act of 1954, as a preliminary for sec. 103 commercial reactors. The FPC site licenses reflect merely the Federal interest in the interstate or foreign commerce aspects, the economic questions are left to the utility regulatory authorities in the States, except as to the sales of electric power in interstate commerce, which are regulated by the FPC.

adequate service or to serve particular customers. A similar provision in the Federal Communications Act enables that Commission to maintain continuity of existing or needed services in the face of the long-drawn-out hearings and protest procedures now in effect.

These compulsory hearings on new applications under the Natural Gas Act have made a great deal of additional formal business for the Commission following the opinion of the Supreme Court in 1954 in the case of *Phillips Petroleum Co.* v. *Wisconsin*,[82] where the coverage of the act was held to include sales for resale, or so-called wholesale sales, in interstate commerce which are not local in character and are constitutionally not subject to State regulations.[83]

It appears that there will be a tremendous volume of work for the legal and engineering staffs of the Power Commission because of this new coverage, but that most of the cases are of relatively little significance when compared with the expense and time consumed in preparing them, and that the hearings are largely pro forma in that no one appears to contest the applications or indeed to press them. However, they do provide for the applicants a rather simple, inexpensive record, and insure that the public interest and that of competitors will be protected more fully than by purely private processing. In addition, the Commission has a shortened procedure to take care of noncontested cases which in time should reduce the annual burden of work, once the backlogs are eliminated. Perhaps some of the criticisms of the powersite licenses might be avoided by having more hearings initiated by the Commission in difficult cases.

4. Maritime Board and Maritime Administration

The Maritime Board's activities concerning the subsidies paid for the construction and operation of ships having a defense value for the United States merchant marine under the Merchant Marine Act of 1936 [84] have a close analogy to the economic, promotional, developmental, and regulatory functions of the AEC in its power-reactor programs for civilian application. The Federal Maritime Board and the Maritime Administration in the Department of Commerce carry on together the functions of the United States Maritime Commission set up by the 1936 act.[85]

Subject to general policies of the Secretary of Commerce, the Federal Maritime Board, after consultation with the Navy Department makes investigations and determinations antecedent to the award of ship-construction subsidy contracts having full regard to the extra costs of the inclusion of defense characteristics required by the Navy Department for the ships to be built.[86] This series of administrative decisions does not involve any public hearings on the applications or the modifications but is carried out ex parte between the applicant, the Board, and the Navy Department. Sometimes an administrative public hearing may be carried out for the Board by the

[82] 347 U. S. 672 (1954).
[83] 347 U. S. 672, 684–685 (1954).
[84] Merchant Marine Act of 1936, 46 U. S. C., secs. 1101–1246 (1952).
[85] The United States Maritime Commission set up in 1936 was abolished by the 1950 Reorganization Plan No. 21, effective May 24, 1950, 15 F. R. 3178, 64 Stat. 1273. The plan transferred part of the Commission's functions, and part of the functions of its Chairman to the Federal Maritime Board and the Chairman thereof. That Board had been created by that plan as an agency within the Department of Commerce, with an independent status, in some aspects. The plan transferred the remainder of the Commission's functions and those of its Chairman to the Secretary of Commerce, with power vested in the Secretary to authorize their performance by the Maritime Administrator, the head of the Maritime Administration, which likewise was established by the plan in the Department of Commerce, with the provision that the Chairman of the Federal Maritime Board, should, ex officio, be such Administrator.
[86] 46 U. S. C., sec. 1151 (1952).

Maritime Administration on the comparable costs of construction of a vessel in foreign and domestic shipyards. There are elaborate percentage requirements for these construction contracts and certain evidential formalities must be observed to justify the Board's final ex parte award, when it is in excess of 33⅓ percent of the total cost (excluding defense features).[87] The Board also has responsibility for ship-operating differential subsidy contracts and when adjustments are requested in the latter, the Board must hold public hearings if it cannot get agreement with the private operator as to the revision sought in the existing subsidy arrangement.[88] These subsidies for construction and operation are for the purpose of placing United States ship building and ship operation on a parity with foreign construction and operation.[89]

The Maritime Administration carries on a series of investigations and surveys on ocean services, routes, and lines.[90] From other investigations it recommends to the Board the construction and operating subsidies to be awarded under the contracts made by the Board with owners and operators of ships,[91] and also recommends requirements for installation of national defense features on ships. The Administration administers the provisions [92] of the subsidy contracts made by the Board. It engages in shipbuilding and ship repairs,[93] charters ships to private operators [94] and in emergencies requisitions or procures for charter, ships owned by or under construction for United States citizens.[95] It also conducts and supports maritime training for marine officers.[96]

Many of the defense characteristics required in new or existing ships under these programs involve classified defense information and techniques. In that respect, both the role of subsidy and the use of defense information and techniques parallel the reactor-power programs for civilian application currently being developed by the Atomic Energy Commission in its programs for experimental and demonstration reactors. Except on the adjustment of ship-operating subsidies when the parties disagree no hearings are required by law. In getting information of comparable costs of foreign and domestic construction hearings are sometimes held. It should be pointed out that the present Atomic Energy Commission forms of contract assistance are also largely a matter of private negotiation, and the final terms are announced only at the end of the period of the negotiations. The importance of the assistance seems at least as great as in the ship-construction and ship-operating fields.

SHORTENED PROCEDURES

A number of agencies have followed the example of the Interstate Commerce Commission in adopting a shorter procedure in the interest of economizing time and resources of both the agency and the parties. The most important of these methods; and the one which is used in very substantial measure as a means of handling formal cases,

[87] 46 U. S. C., sec. 1152 (1952).
[88] 46 U. S. C., sec. 1176 (1952).
[89] 46 U. S. C., sec. 1101 (1952).
[90] 46 U. S. C., sec. 1120 (1952).
[91] 46 U. S. C., sec. 1121 (1952).
[92] 46 U. S. C., sec. 1152 (1952).
[93] 46 U. S. C., sec. 1125 (a) (1952).
[94] 46 U. S. C., subch. VII, secs. 1191–1204 (1952).
[95] 46 U. S. C., sec. 1242 (1952).
[96] 46 U. S. C., sec. 1126, 1126a, 1126b, 1126c (1952).

is the so-called shortened procedure, the essence of which consists in the substitution, upon consent of the parties to proceedings involving simple issues, of sworn memoranda of fact and argument for the usual oral hearings. After about a year of experimentation, the Commission adopted the shortened procedure for the handling of the simpler formal cases on December 3, 1923.[97] Later the regulations governing this procedure were incorporated into the Commission's rules of practice.[98] This procedure made no provision for the cross-examination of witnesses and because it was used in place of hearings required by statute it was entirely dependent upon the consent of the parties to the hearing. The rights of the parties were, however, safeguarded by the provision that at the request of any party the proceeding would be assigned for oral hearing at any time prior to the service of the examiner's proposed report, and that it might be set for hearing by the Commission in its discretion at any stage of the proceeding.[99]

In 1937, Professor Sharfman in his classic work on the Interstate Commerce Commission wrote:

> While it is occasionally found inadequate as a means of effecting satisfactory adjustments, the shortened procedure, through which from its inauguration in 1923 to November 1, 1936, about a third of all the formal complaints filed during that period have been handled, has proved to be a very acceptable method of conducting the more simple regulatory proceedings, with substantial savings of both time and expense.[1]

At the same time the Commission was experimenting with the "modified procedure" which contemplated reliance upon memoranda with respect to those issues upon which agreement can be reached by the parties in whole or in part, and the taking of oral testimony upon the matters in disagreement. It was used in the more complicated cases. There was also a form of pretrial conference called the conference plan.[2]

The Commission since 1942 has had both the shortened and the modified procedures in its rules of practice.[3] When the parties do not promptly agree to the shortened procedure the Commission may, on its own initiative order the modified procedure and, with one exception, the same rules apply to both forms of procedure.[4] That exception has to do with cross-examination.

Volume 49, Code of Federal Regulations, section 1.53 (1956 Supp.) reads:

> 1.53. *Modified procedure; hearings*—(a) *Request for cross-examination or other hearing.*—If cross-examination of any witness is desired the name of any witness and the subject matter of the desired cross-examination shall, together with any other request for oral hearing, including the basis therefor, be stated at the end of defendant's statement or complainant's statement in reply as the case may be.

[97] See Sharfman, The Interstate Commerce Commission, IV, pp. 221–227, 308–309 (1937).
[98] 49 CFR, secs. 1.44, 1.46 (a), 1.47, 1.48, 1.49, 1.50, 1.51, 1.52, 1.54 (1956 Supp.).
[99] 49 CFR 1.44 (b) (1950).
[1] Sharfman, op. cit., p. 226.
[2] Sharfman, op. cit., p. 221, note 177.
[3] 49 CFR, sec. 1.45 (1956 Supp.).
[4] See rules cited in note 55 supra. See also O'Brien, Why the Modified Procedure? 21 I. C. C. Practitioners' Journal, pp. 106–108 (1953).

(*b*) *Hearing issues limited.*—The order setting the proceeding for oral hearing, if hearing is deemed necessary, will specify the matters upon which the parties are not in agreement and respecting which oral evidence is to be introduced.

Several other agencies have adopted a shortened procedure, the Federal Power Commission,[5] the Commodities Exchange Authority [6] in the Department of Agriculture, and the Securities and Exchange Commission [7] has its own special informal procedures to achieve the same result where possible.

POLICY CONSIDERATIONS

The need for hearings in all cases of applications for construction permits or operating licenses for facilities under sections 103 and 104 of the Atomic Energy Act of 1954 is a question that must be considered from a number of aspects. There are the factors of time and numbers, which at present would appear to indicate that a formal hearing requirement on all applications, to be preceded by ample notice of proposed action thereon, would not unduly burden the AEC as compared with the volume of cases the FCC and the FPC have recently had to handle. On the other hand there is the factor of much greater complexity and difficulty of preparation and decision which must be met in current AEC applications, particularly for construction permits in new fields at the present time, and later perhaps also in the applications for operating licenses.

Also to be weighed is the public interest, the interest of potential competitors or additional applicants and above all the intangible item of public confidence in the AEC programs for civilian application of the sources of atomic energy. Only by an adequate public record will all these interests be aware of what can be done, and what has been done. Only in that way will the fear of the safety hazards involved in a reactor accident be alleviated, with the knowledge and understanding of the safety factors and the care and consideration given to these matters by the applicants and the AEC.

APPENDIX 16

SEPARATION OF FUNCTIONS IN ADMINISTRATIVE AGENCIES

By Professor J. Forrester Davison

A. General

Legislative proposals for the separation of the adjudicatory functions of administrative agencies from their policymaking and executive functions have been under consideration at least since the 2d session of the 73d Congress (1934). Discussions on the subject also were soon underway in a committee of the American Bar Association and in 1936 some legislative proposals were made by Senator

[5] Federal Power Commission, 18 CFR, sec. 1.32 (a) and (b) (1949).
[6] Commodities Exchange Authority, 17 CFR, sec. 0.67; Secretary of Agriculture, 17 CFR, sec. 0.17 (1949).
[7] Securities and Exchange Commission, 17 CFR, pt. 202—Informal and Other Procedures; 202.1—General; 202.2—Prefiling assistance and interpretive advice; 202.3—Processing of filings and facilitating administrative hearings; 202.4—Enforcement activities; 202.5—Adoption revision, and rescission of rules and regulations of general application (1949). On March 12, 1957, 22 F. R. 1588, the Federal Maritime Board and Commission gave notice of proposed rulemaking concerning a new "modified" form of shortened procedure.

Logan of Kentucky and Congressman Walter of Pennsylvania.[8] Hearings on these proposals in 1938 and 1939 led to favorable reports by the Judiciary Committees and Congress passed the Walter-Logan bill (providing for internal separation of agency functions and more court review) which was vetoed [9] by the President on the ground that action on these matters should wait upon the final report [10] by a committee appointed by the executive to study the matter, the Attorney General's Committee Report on Administrative Procedure.[11] This report became the basis for the legislation passed in 1946, the Administrative Procedure Act.

The first proposals sponsored by the American Bar Association and by Senators Norris and Logan were for an Administrative Court, and were based on a demand for more adequate judicial control and review of administrative decisions, with particular objection being noted of the "judge-prosecutor" combination of judicial and enforcing functions in the same persons or groups. The problem was how to divorce the quasi-judicial functions from the other administrative functions. Whether to make a complete separation by setting up an Administrative Court or other tribunal for judicial functions, or whether to attempt to use internal separation devices, were the basic issues.[12] A practical inability to work out the functions to be transferred to the new court led to the compromise of internal separation in the Logan-Walter bill which later became the solution of the Administrative Procedure Act [13] in a revised and "improved" version of the Logan-Walter bill.

The Hoover Commission reports in 1949 and 1955 [14] recommended a further form of separation of the administrative housekeeping and enforcement activities from the top agencies engaged in adjudication and policy and rule making activities by setting up executive staffs responsible to and reporting to only the chairman of each agency board.[15] The second Hoover Commission in 1955 also recommended again the creation of an independent centralized tribunal known as the Administrative Court and would put the administrative hearing examiners, for all agencies covered, under that court.[16]

These recommendations go further than any existing legislation except perhaps in the tax field where the Tax Court is a much admired prototype tribunal,[17] whose success from the point of view of approval by practicing lawyers suggests the inevitability of an Administrative Court of more general jurisdiction, to take over the judicial functions

[8] Administrative law bills from the 73d through the 79th Congresses are listed in chart form in Legislative History, Administrative Procedure Act, S. Doc. 248, 79th Cong., 2d sess., at pp. 62 and 188.
Also of interest is the experience of an appellate reviewing administrative tribunal as represented by the experience of the short-lived Commerce Court. See Sharfman, Interstate Commerce Commission, I, pp. 60–70 (1931).
See S. Rept. 752, 79th Cong., 1st sess., of the Committee on the Judiciary on S. 7, a bill to improve the administration of justice by prescribing fair administrative procedure; reprinted in Administrative Procedure Act, Legislative History, S. Doc. 248, 79th Cong., 2d sess. (1946), at pp. 189–190.
[10] Loc. cit. p. 190.
[11] S. Doc. 8, 77th Cong., 1st sess. (1941), reprinted this report.
[12] 61 ABA Rept. 760–767 (1936); 62 id. 806 (1937); 64 id. 583 (1939).
[13] 60 Stat. 237 (1946), 5 U. S. C. 1001–1011 (1952).
[14] The Commission on Organization of the Executive Branch of the Government, Reports to the Congress, 1949 and 1955.
[15] Id., Report on the Independent Regulatory Commissions, Recommendation No. 1, p. 5 (1949). See also Report of President's Committee on Administrative Management, 1937, pp. 32–33, 39–42 to the same effect, for details pp. 226–234.
[16] Id., Report on Legal Services and Procedures, Recommendations Nos. 51 and 52, pp. 84–93 (1955). See also the draft legislation giving detailed changes which was submitted by the task force report to the Commission on Legal Services and Procedures, secs. 400–412, 500–508, printed in the task force report, pp. 377–384, with explanations in detail at pp. 419–424 (1955).
[17] For a discussion of the merits of the Tax Court as a separate court, see Gribbon, Should the Judicial Character of the Tax Court Be Recognized? 24 Geo. Wash. L. Rev. 619 (1956).

of the administrative agencies. While this is the ultimate proposal for separation of functions the many lesser forms including internal separation of functions have been the basis for individual agency statutes.

The regulation of the civilian application of the uses of atomic energy by the Atomic Energy Commission is still in a fluid state and any recommendations for improved internal separation would cover primarily the developmental stages of the next decades. Later a more formalized and stable situation should develop for which other solutions will be desirable. Indeed there may be two stages in this developing period. The present stage when there are relatively few applications for construction permits and operating licenses, and a later stage when there are many applications. While at the present time the emphasis is exclusively on research and demonstration reactor programs, with elements of uniqueness, a later stage will find its principal burdens of decision in the fields of commercial operating licenses with conflicting economic interests

While these studies of the AEC procedures and the questions they present are concentrated on the present activities of the AEC, and comparisons are made with the past and present activities of other regulatory agencies which have related functions, the considerations for internal or other separation of functions will cover both the immediate future and the next stage of commercial development on a large scale.

The Administrative Procedure Act, which applies to the administrative agencies including the Atomic Energy Commission, has separate procedural requirements for rulemaking and adjudication, being more formalized for the latter.[18] Though no guide is given as to when a proceeding is rulemaking or adjudicative, in practice the agencies tend to follow the higher standards of an adjudicative hearing when in doubt. Since one of the basic complaints of the administrative process was the combination of the judge-prosecutor function, it is interesting to note that separation provisions which are found in section 5 of the Administrative Procedure Act deal with that issue only as to certain areas of administration. In addition to the six basic procedures exempted from the whole of section 5, subsection (c) thereof (providing for a separation internally between prosecuting and adjudicating personnel), exempts proceedings on

> applications for initial licenses or to proceedings involving the validity or application of rates facilities, or practices of public utilities or carriers; nor shall it be applicable in any manner to the agency or any member or members of the body comprising the agency.

But the committee report on this part of the bill emphasized that—

> There are, however, some instances of either kind of case which tend to be accusatory in form and involve sharply controverted factual issues. Agencies should not apply the exceptions to such cases, because they are not to be interpreted as precluding fair procedure where it is required.[19]

[18] Administrative Procedure Act, secs. 4 and 5, 60 Stat. 238–239 (1946), 5 U. S. C., secs. 1003–1004 (1952).
[19] S. Rept. 752, 79th Cong., 1st sess., on S. 7, reprinted in Legislative History, Administrative Procedure Act 1946, S. Doc. 248, 79th Cong., 2d sess. (1946), at pp. 185 ff., particularly 203–204.

The latter sentence no doubt applies to "due process of law" in the Minnesota [20] and ICC cases.[21]

Failure to comply with the separation requirements of section 5 (c) in an alien deportation proceeding led the Supreme Court of the United States in *Wong Yang Sung* v. *McGrath* [22] to decide that the proceeding was illegal and to state "Indeed, to so construe the Immigration Act [and the Administrative Procedure Act] might again bring it into constitutional jeopardy * * *" (brackets supplied). Although subsequent legislation appears to lessen slightly the requirements of section 5 (c) in this field, the Immigration and Nationality Act of 1952 [23] purported to duplicate most of the requirements and on that ground the Supreme Court upheld action in the case of *Marcello* v. *Bonds* [24] which omitted one requirement of the original 5 (c).[25]

On initial licensing by the ICC where again one requirement of section 5 incorporating provision of sections 7, 8, and 11 of the APA had not been observed the Supreme Court ruled it illegal action in the *Riss & Co.* v. *United States*,[26] per curiam opinion, citing only *Wong Yang Sung* v. *McGrath*; but in a later case simply pointed out that the objection had not been made at the administrative stage and was too late.[27]

Neither the Administrative Procedure Act nor the Atomic Energy Act of 1954 has therefore any clear-cut provisions dealing with separation of functions in licensing or construction permit application proceedings and only through court interpretation of the meaning of section 5 (c) or the rules and regulations of the AEC would separation be brought about. In the P.R.D. Co., case now under consideration before a hearing examiner there is a *de facto* separation of the legal and engineering staffs working on that case for the AEC, as a party to the proceedings, from the full legal and engineering staffs which are still free to consult with and advise the five individual commissioners as to rulings on motions, as well as the final decision in the case.

B. The Federal Communications Commission

In 1952 the Federal Communications Commission Act was amended to provide a far-reaching internal separation of functions. That amendment provided the most recent expression of legislative trends in this matter. Earlier provisions of the act had permitted the Commissioners to hear cases, either individually or in panels, but the new act, in line with the 1949 Report on Government Management to Congress, makes the Chairman alone responsible for details of administration,[28] through an executive assistant, and makes the Chairman and the other Commissioners sitting as a body responsible for

[20] *Chicago, Milwaukee and St. Paul Railway Co.* v. *Minnesota*, 134 U. S. 418, 457 (1890).

[21] *Interstate Commerce Commission* v. *Ill. Central R. R. Co.* 215 U. S. 452, 470 (1910); *Interstate Commerce Commission* v. *Union Pacific*, 222 U. S. 541, 547–549 (1912); *Interstate Commerce Commission* v. *Louisville and Nashville R. R.*, 227 U. S. 88, 92–93 (1913); *United States* v. *Illinois Central R. R.*, 291 U. S. 457 (1934).

[22] *Wong Yang Sung* v. *McGrath*, 339 U. S. 33, 50 (1950).

[23] Sec. 242 (b), 66 Stat. 209 (1952), 8 U. S. C. 1252 (b) (1952).

[24] *Marcello* v. *Bonds*, 349 U. S. 302, 307–311 (1955).

[25] Mr. Chief Justice Warren at p. 311 of 349 U. S. said:

"As noted above, the only complaint which petitioner can urge concerning the hearing procedures in this case is the objection that the special inquiry officer was subject to the supervision and control of officials in the Immigration Service charged with investigative and prosecuting functions * * *. The contention is without substance when considered against the longstanding practice in deportation proceedings, judicially approved in numerous decisions in the federal courts, and against the special considerations applicable to deportation which the Congress may take into account in exercising its particularly broad discretion in immigration matters."

[26] 341 U. S. 907 (1951), reversing *Riss & Co.* v. *United States*, 96 F. Supp. 452 W. D. Mo. (1950). At p. 457 of 96 F. Supp. the Court said, "Having received a 'fair' hearing before the Commission, the fact that it was not conducted by an Examiner appointed under sec. 11 of the APA does not convert it into an unconstitutional one, or deny to plaintiff 'due process of law' in the inquiry and consideration of its said application."

[27] *United States* v. *L. A. Tucker Truck Lines*, 344 U. S. 33 38–4 (1952).

[28] 47 U. S. C., sec. 155 (a) (1952).

deciding adjudicatory matters[29] and for the performance of the quasi legislative rulemaking and other policy determinations. The Chairman as the chief executive officer must preside at all meetings and represent the Commission in legislative and intergovernmental matters. Generally he is to coordinate and organize the work of the Commission to achieve prompt and efficient disposition of all matters within its jurisdiction.

The Commission is also required to organize its staff into integrated bureaus to function on the basis of its principal workload operations and such other divisional organization as it may deem necessary. The integration should include legal, engineering, accounting, administrative, clerical, and other personnel in each of the integrated bureaus.[30] An important form of separation was achieved by setting up an integrated "review staff" to be directly responsible to the five members of the Commission and not part of any bureau or division, nor subject to the supervision of any individual outside its own group or the Commission members. It is to perform no functions or duties other than to assist the Commission in cases of adjudication which have been designated for hearing in a formal hearing.[31] The Commission shall not permit any employee not a member of the review staff to perform any of its duties, except the special legal and engineer assistants and personal secretary each Commissioner is entitled to appoint under section 154 (f) of title 47, United States Code.

As in the immigration legislation in 1952, a little Administrative Procedure Act is specially included in section 409.[32]

Section 409 (a) states in detail that cases of adjudication which have been designated for a hearing shall be held either before the Commission (five members or quorum) or by one or more examiners provided by section 11 of the Administrative Procedure Act. Subsection (b) provides for the initial decision or that it may be dispensed with by order of the Commission, for exception to such a decision when filed, and prescribes the contents of the formal record required. Subsection (c) begins the "little Administrative Procedure Act" for the FCC. The first paragraph provides for the insulation of examiners and the third paragraph provides for complete nonparticipation of any members of the investigative and prosecuting staffs except as witnesses or counsel in public proceedings. The middle paragraph refers to the special offices of the Commission and their members as follows:

> (2) In any case of adjudication (as defined in the Administrative Procedure Act) which has been designated for a hearing by the Commission, no person who has participated in the presentation or preparation for presentation of such case before an examiner or examiners or the Commission, and no member of the Office of General Counsel, the Office of the Chief Engineer, or the Office of the Chief Accountant shall (except to the extent required for the disposition of ex parte matters as authorized by law) directly or indirectly make any

[29] 47 U. S. C., sec. 409 (a) (1952).

[30] 47 U. S. C., sec. 155 (b) (1952). "Within six months after July 16, 1952, and from time to time thereafter as the Commission may find necessary, the Commission shall organize its staff into (1) integrated bureaus, to function on the basis of the Commission's principal workload operations, and (2) such other divisional organizations as the Commission may deem necessary. Each such integrated bureau shall include such legal, engineering, accounting, administrative, clerical, and other personnel as the Commission may determine to be necessary to perform its functions."

[31] 47 U. S. C., sec. 155 (c) (1952). This provision thus achieves the result for the FCC recommended by the 1937 Report on Administrative Managements for all administrative agencies, complete separation o the judicial staffs from the prosecuting staffs.

[32] 47 U. S. C., sec. 409 (a)–(j) (1952).

additional presentation respecting such case, unless upon notice and opportunity for all parties to participate.

These separation of functions provisions have proven a great burden to the professional staffs. In practice the lawyers in the Office of General Counsel do not feel able to discuss cases not yet designated for a formal hearing, if those cases are similar in law or facts to cases already down for public hearing. Consequently they believe that inadequate preparation by the Broadcast Bureau may result from this insulation from the professional staffs, for the only time the Office of General Counsel may participate in a case is after a Commission final formal order, when the stage of court review has been reached.

Subsection (d) provides this Act shall, to the extent that the provisions of this section are in conflict with the Administrative Procedure Act, supersede and modify the provisions of that Act. That is required by the terms of section 12 of the Administrative Procedure Act because section 409 has provisions more strict in effect than the Administrative Procedure Act. Section 7 (a) of the Administrative Procedure Act, for example, would permit an individual Commissioner to hear a case, which is now prohibited for the FCC.

Subsections e–1 deal with evidence and enforcement procedural details and subsection m deals with penalties.

The present role of the "review staff" of the FCC is a manifestation of congressional policy that appears in part a retreat from the congressional policy against anonymous review personnel, who have such a great practical role in formulating and writing the decisions and orders of administrative agencies.[33]

C. National Labor Relations Board

In the Labor-Management Relations Act of 1947[34] the provisions of the law required the abolition of review personnel and sought to protect the hearings from improper combinations of functions by special statutory provision. Though the Administrative Procedure Act sought to achieve a uniform standard of procedure and internal relationships to a considerable degree, these two recent statutes again emphasize the unique problems and procedures of administrative agencies. The House bill had abolished the existing National Labor Relations Board and created a new one with three members, and limited the new Board to the performance of quasi-judicial functions under the act. The new investigating and prosecuting functions were to be performed by an Administrator, a new independent office to be created. The Senate amendment retained the existing Board of 5 but increased its membership to 7 and provided it could assign its duties to panels of 3. The conference agreement retained the existing Board but increased its membership to 5 and provided that the Board might delegate its powers to 3 or more. The quorum is also three. Instead of an independent Administrator the act provided for a General Counsel to be appointed by the President by and with the advice and consent of the Senate for a term of 4 years. The Board members have 5-year staggered appointments. The General Counsel exercises general supervision over all attorneys employed by the Board (other than trial examiners and legal assistants to Board members) and over

[33] H. Rept. No. 1750, 82d Cong., 2d sess., April 8, 1952, to accompany S. 658. Reprinted in 1952, 2, U. S. C., Congressional and Administrative News, p. 2234, at p. 2240. For a discussion of the changes in sec. 409 of F. C. C. Act see pp. 2252–2254.

[34] 29 U. S. C., secs. 151–197 (1952).

the officers and employees in the regional offices, where most of the cases come in and are developed. He also has final authority, on behalf of the Board, in respect to the investigation of charges and issuance of complaints and in respect to the prosecution of such complaints before the Board, "and shall have such other duties as the Board may prescribe or as may be provided by law." He is given the same salary as Board members and is under the same disability that he shall not engage in any other business, vocation, or employment.[35]

Section 154 (a) prohibits a review staff and professional assistants.

> * * * The Board may not employ any attorneys for the purpose of reviewing transcripts of hearings or preparing drafts of opinions except that any attorney employed for assignment as a legal assistant to any Board member may for such Board member review such transcripts and prepare such drafts. No trial examiner's report shall be reviewed either before or after its publication, by any person other than a member of the Board, or his legal assistant, and no trial examiner shall advise or consult with the Board with respect to exceptions taken to his findings, rulings, or recommendations * * *. Nothing in this subchapter shall be construed to authorize the Board to appoint individuals for the purpose of conciliation or mediation, or for economic analysis.[36]

As the conference report points out these provisions as to separation of functions and the abolition of the review staffs with prohibition of using professional assistance other than authorized by the act effectively limit the Board to the performance of quasi-judicial duties.[37]

The President vetoed the bill primarily on the basis of its substantive law and its effect on labor-management relations but he also objected strongly to the separation of functions between the independent General Counsel and the independent Board and the restriction of the Board to quasi-judicial functions, stating:

> It would invite conflict between the National Labor Relations Board and its General Counsel, since the General Counsel would decide without any right of appeal by employers and employees, whether charges were to be heard by the Board, and whether the orders of the Board were to be referred to the court for enforcement. By virtue of this unlimited authority, a single administrative official might usurp the Board's responsibility for establishing policy under the act.[38]

The Congress repassed the bill over the veto [39] and such a conflict did arise between the Board and its first General Counsel who ultimately was induced to resign and a more harmonious appointment was apparently obtained. It was also felt in the veto message that the Board was unduly straitjacketed in all its proceedings and the review functions within the Board "largely of a nonjudicial character,

[35] H. Rept. No. 510, 80th Cong., 1st sess., Committee of Conference, June 3, 1947. Reprinted in 1947 U. S. C., Congressional Service, p. 1135, at pp. 1142-1143.
[36] 29 U. S. C., sec. 154 (a) (1952).
[37] Op. cit. supra, note 28 at p. 1143.
[38] On June 20, 1947, President Truman returned to Congress without his signature H. R. 3020, the Labor-Management Relations Act of 1947. His veto message is reprinted in 1947 Congressional Code Service, at p. 1851. See p. 1855 for item 5 (2).
[39] On June 20, 1947, the House of Representatives repassed the bill over the Presidential veto, and on June 23, the Senate did the same.

would be split up and assigned to separate staffs attached to each Board member. This would lead to extensive and costly duplication of work and records." [40]

D. *Civil Aeronautics Board and Civil Aeronautics Administration* [41]

The 1949 Task Force Report on the Independent Regulatory Agencies to the Commission on Organization of the Executive Branch of the Government [42] discussed the position of the Civil Aeronautics Administration in the Government structure, as follows:

> In our general discussion, it has been suggested that independent regulatory commissions should ordinarily not be assigned extensive executive duties involving large field staffs or operating programs. In the civil-aviation field, this segregation of executive from regulatory functions was largely accomplished by Reorganization Plans III and IV, effective June 30, 1940.
>
> The Administrator of Civil Aeronautics now operates as a part of the Department of Commerce. His duties are primarily administrative, involving the expenditure of large sums for physical facilities, such as airways and airports. In addition, he enforces safety regulations in the field by inspection and regulation of aircraft, air carriers, airmen and the like. In safety regulation and accident investigation, the Board and the Administrator both have responsibilities, as discussed hereafter.

The task force report then went on to recommend [43] that many of the safety regulations could be better drafted in the CAA which had firsthand operating experience in these matters, but that since there is often a direct relationship between the safety regulations and policies and economic regulation to be retained by the Board, the primary civil-air regulations should be vested in the Civil Aeronautics Administration, but that on appeal by an aggrieved party the Civil Aeronautics Board should be authorized in its discretion to determine after public hearing whether a safety regulation or standards proposed by the Civil Aeronautics Administration should be issued. Also in the enforcement of the civil air regulations while the Administrator is the primary enforcing agency with power to reprimand violators, compromise civil penalties, and refuse renewal of certificates of competence or deny applications, the Board has the power to suspend or revoke certificates of competency. Noting the local character of

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[40] Lo. cit. supra, note 30, at p. 1855 for item 5 (3).

[41] Civil Aeronautics Authority. United States Government Manual 1956–57. p. 276.

"Creation and Authority—Under the Civil Aeronautics Act of 1938 (52 Stat. 973; 49 U. S. C. 401), the Civil Aeronautics Authority was established as an independent agency composed of the Civil Aeronautics Authority of 5 members, the Administrator, and the Air Safety Board of 3 members.

"By Reorganization Plans III and IV, effective June 30, 1940, issued pursuant to the Reorganization Act of 1939 (53 Stat. 561; 5 U. S. C. 133), the name of the five-member board was changed to the Civil Aeronautics Board and certain of its functions were transferred to the Administrator. The offices of the members of the Air Safety Board were abolished and the functions of the Air Safety Board were transferred to the Civil Aeronautics Board. The Administrator was transferred to the Department of Commerce. The Board exercises its functions of rulemaking (including the prescription of rules, regulations, and standards) adjudication, and investigation, independently. The Administrator exercises his functions under the direction and supervision of the Secretary of Commerce. The plans further provided that the Administrator of Civil Aeronautics and the Civil Aeronautics Board constitute the Civil Aeronautics Authority. However the Civil Aeronautics Board as such performs no functions."

[42] Commission on Organization of the Executive Branch of the Government (1949) "Report on Regulatory Commissions, p. 5. Recommendation No. 1. We recommend that all administrative responsibility be vested in the chairman of the Commission, p. 10. Recommendation No. 6. The Commission therefore recommends that the statutes be amended so as to permit the commissions to delegate, routine, preliminary and less important work to members of the staffs under their supervision.

[43] Task Force Report on Independent Regulatory Commissions (appendix N) prepared for the Commission on Organization of the Executive Branch of the Government. January 1949. pp. 78–79.

many of these issues the CAA suggested that CAB hearing examiners could be designated as commissioners of United States district court and authorized to try violators and impose a penalty up to $1,000 or a reprimand or to revoke certificates of competency and that State law-enforcement officers be authorized to file complaints and prosecute violations of Federal air traffic rules within their State unless the alleged violator is operating under the terms of an air carrier operating certificate.

It was recommended also that all investigations of aircraft accidents be taken over by the CAB so as to avoid duplications with the CAA and also because of the possible conflict of interest of the CAA with its certification and inspections and its operation of airways and traffic facilities.

There is now a considerable problem created by the quasi-independent status of the CAB as contrasted with the status of the CAA as a bureau of the Department of Commerce subject to the executive control and direction of the Secretary of Commerce and an Under Secretary for Transportation. Many of the same technical staffs serve both the CAB and the CAA and as employees of the Department of Commerce. The executive direction of the Department is inconsistent with the professional and technical skills and objectivity that staffs and members of independent administrative agencies should demonstrate.

E. Maritime Board and Maritime Administration

A somewhat similar series of questions has arisen with respect to the roles and status of the Federal Maritime Board and the Maritime Administration of the Department of Commerce with an Administrator who is also Chairman of the independent Board and Deputy Administrators who are the other two members of the Board. Under the reorganization plan they share the responsibility of the former United States Maritime Commission and their roles in ship subsidies for construction and operation have been set forth above in the discussion of hearings.[44]

There is reported to be some confusion as to the capacity in any matter in which the officials are acting since both the Board and the Administration are advised and served by the same staffs largely. The confusion is dealt with in practice by having two sets of documents prepared in doubtful cases and having them executed by members of the Board and the Administrators in the capacity appropriate to the nature of the document and its purported action. This practice does not seem likely to ensure the most efficient operation, or the best judgment of an independent objective quality when controversial policy matters are under consideration, particularly if acting under the pressures of times or events within or without Government.

[44] Federal Maritime Board. U. S. Government Manual 1956–57, p. 281.
"The Federal Maritime Board was established as an agency within the Department of Commerce by Reorganization PlanNo. 21 of 1950, effective May 24, 1950. The Board is composed of three members appointed by the President, by and with the advice and consent of the Senate. The President designates one of the members to be Chairman of the Board. *The Chairman of the Board also serves ex officio as Maritime Administrator.*" [Italic supplied.] Maritime Administration. * * * United States Government Manual, 1956–57, p. 282.
"The Maritime Administration was created by Reorganization Plan No. 21 of 1950, effective May 24, 1950, as an agency in the Department of Commerce, carrying out its functions under delegation of authority from the Secretary of Commerce."

In fact the reorganization plan [45] sought to free the Board members from the burdens of administration so as to improve the quality and timing of their regulatory adjudicatory and policy making functions. Congressman Thompson introduced a bill in the 84th Congress to remove the Federal Maritime Board from the Department of Commerce and make it an agency independent of the Secretary of Commerce in the executive branch of Government because of the present unsatisfactory situation.[46] He gave an illustration of the complications to be faced:

> Only recently, there appeared in the press a story which illustrates how incongruous the situation can become where the one man tried to wear two hats. The Maritime Administrator is presently appealing to the Board for its ruling on some matters which are acted upon by the Administrator. So in effect, the Administrator is appealing to himself and to other members of the Board.

POLICY CONSIDERATIONS

The unique relationship in the AEC of the regulatory program, now in a very restricted opening stage, to the great developmental and promotional activities of the AEC in the production of nuclear materials and the development of fission and fusion operating facilities makes it very difficult to find any compelling illustrations of the proper governmental organization structures. It is apparent that basic policy

[45] See Message of the President of March 13, 1950, transmitting Reorganization Plan No. 21 to the Congress. "It will facilitate cooperation between the Board and the Administration on matters of concern to both. Also, it will avoid dividing the personnel of the Maritime Commission, since the Chairman of the Board will supervise the personnel assisting it in the performance of its functions, as is now the case in the Maritime Commission, and in his capacity as Administrator he will have charge of the personnel carrying on the work of the Maritime Administration * * *. The maintenance of a unified staff is essential for efficient and economical administration, * * *."

The Hoover 1949 Task Force Report, appendix N, cited supra note 36 recommended substantially the changes of Reorganization Plan No. 21 of 1950, pp. 59, ff. at p. 64: "Accordingly, the wise course seems to be to shift the administrative and operating functions of the present Maritime Commission to an Administrator, responsible to the President, and to leave the regulatory and promotional functions in the hands of the Commission."

This does not seem to contemplate that the Administrator and the Chairman be the same person or that other Board members be Deputy Administrators.

[46] On May 2, 1956, Representative Thompson of Louisiana introduced H. R. 10963, 84th Cong., 2d sess., to provide a more complete separation. In commenting on his bills, Mr. Thompson made the following statements:

"Under the Merchant Marine Act of 1936 there was established the United States Maritime Commission. The Commission was vested with authority to carry out *not only the regulatory powers contained in the several shipping acts, but also the operational and promotional responsibilities created by the 1936 act itself.* As the years went by serious deficiencies of administration were disclosed by several investigations of the Maritime Commission. As a result, the Commission was legislated out of existence by *Reorganization Plan No. 21*, which set up the Federal Maritime Board and the Maritime Administration in the Department of Commerce. *The Board* was composed of three members and was charged with responsibility for carrying out the regulatory functions performed by the former United States Maritime Committee. It also was vested with authority to perform the functions relative to the awards of subsidy and related matters. *Maritime Administration*, on the other hand, was charged with responsibility for carrying out all the other functions previously carried out by the Maritime Commission. *This separation of functions was a step in the right direction, but unfortunately it did not go far enough.* The main deficiency in the organization established by Reorganization Plan No. 21 was in the fact *that the Chairman of the Maritime Board was made ex officio the Maritime Administrator.* This fact alone has served to defeat the very purpose underlying the separation of the functions previously performed by the Maritime Commission." * * *

"Experience in the workings of the two agencies, the Board and the Administration, since their creation in 1950, has demonstrated that the regulatory functions which suffered by reason of the limitations necessarily placed on the one individual who attempts to serve in both capacities. This was a mistake from the beginning. If the job to be done was too big for the 5-man Maritime Commission, how could 1 man give the necessary time and attention to directing the activities of the Board and of the Administration." * * *

"Only recently, there appeared in the press a story which illustrates how incongruous the situation can become where the 1 man tries to wear 2 hats. *The Maritime Administrator is presently appealing to the Board for its ruling on some matters which are acted upon by the Administrator.* So in effect, the Administrator is appealing to himself and to other members of the Board.

"*The bill which I have introduced would amend Reorganization Plan No. 21 so as to remove the Maritime Board from the Department of Commerce and make it an independent agency in the executive branch.* This independence, I believe, is essential to the efficient performance of duties by a regulatory body of the nature of the Maritime Board. Under this organizational setup, the personnel and facilities of the Board would be entirely independent of the Maritime Administration." [Italics added]. H. R. 10963 was referred to the House Committee on Government Operations, but not further discussed nor considered publicly by the Congress. Congressional Record, May 2, 1956, pp. A3509–A3510.

in the military and civilian fields of energy production, and materials licensing is still a major preoccupation of the full Commission and must remain so for many years. That consideration also applies to the development and operations of military and civilian reactors and facilities, and with respect to the state of the art as to both weapons and peaceful utilization of the power available from nuclear materials. Yet it would appear that the strengthening of the adjudicatory processes in the civilian licensing field for reactors, requires some form of independent adjudicatory authority. There are few examples, other than the CAB, CAA relationship with the Department of Commerce and the Federal Maritime Board and Maritime Administration in the same Department, where adjudicatory functions are definitely separated out from the other phases of regulation as well as from the Executive promotional and developmental functions. Within the Department of Agriculture one can find a semi-independent Commodities Exchange Authority [47] performing functions for the Commodties Exchange Commission [48] composed of three members of the Executive Departments. Within the Department of Health, Education, and Welfare, there is the semiautonomous Food and Drug Administration,[49] and Social Security Administration,[50] with its completely independent adjudicatory body, the Appeals Council,[51] which reviews and revises the awards of referees to beneficiaries under the Social Security Act. The regulations as to policy are promulgated by the Administrator of Social Security with the approval of the Secretary of Health, Education, and Welfare.

The unhappy experience with a single independent official such as the independent General Counsel of the National Labor Relations Board under the 1947 Labor Management Relations Act indicates the unwisdom of using the judgment and discretion of a single individual in difficult decisions as to whether to prosecute, and the numbers of appeals from single judges in all phases of court work involving novel problems, suggests the unwillingness of parties to adversary proceedings to accept any one-man decision in new fields of the law. Accordingly, a board or council of at least three persons seems desireable whenever difficult policy decisions or adjudicatory decisions have to be made. An Appeals Council or Appeals Board working with a

[47] U. S. Government Organization Manual 1956–57. Department of Agriculture p. 234, 251. "Commodity Exchange Authority. The Commodity Exchange Administration was established pursuant to an order of the Secretary of Agriculture of June 30, 1936, to administer the Commodity Exchange Act. From 1923 to 1936 it had been known as the Grain Futures Administration. Consolidated in 1942 with other agencies of the Department of Agriculture, it was reestablished February 1, 1947, pursuant to Secretary's Memorandum 1185, as a separate agency of the Department and designated as the Commodity Exchange Authority."

For the Commodity Exchange Regulations promulgated by the Secretary of Agriculture see 17 CFR, ch. 1, pts. 0–11 (1949).

[48] Commodity Exchange Commission, see 7 U. S. C. sec. 8 (1952). For a description of its membership and functions see U. S. Government Organization Manual, 1956–57. p. 357. See also 17 CFR, ch. 1, pt. 0, subpt. B, 050–096 for its rules of procedure (1949), and pt. 150 for its orders (1957 Supp.).

[49] Food and Drug Administration 21, U. S. C., secs. 1–15 (1952). For a description of its functions within the Department of Health, Education, and Welfare where it was transferred in 1953 from the Federal Security Agency after an earlier period with the Department of Agriculture, see U. S. Government Organization Manual, 1956–57, p. 338.

[50] The Administrator was substituted for the Social Security Board to perform the Board Functions under the Social Security Act, see 42 U. S. C. ch. 7, secs. 301 ff, 1301–1301. The present status of the Social Security Administration is now within the Department of Health, Education, and Welfare created by Reorganization Plan No. 1 of 1953 under the provisions of 67 Stat. 18, 5 U. S. C. 623. For a description of its functions see U. S. Government Manual, 1956–57, 327 ff.

[51] The Administrator has delegated his hearings and review functions under secs. 405 and 406 of 42 U. S. C. (1957) to a group of referees and the Appeals Council making up the Office of Appeals Council in the Social Security Administration, U. S. Government Organization Manual, 1956–57 329. This consists of 4 members, located in Washington, D. C., a consulting referee; and more than 25 referees located in major cities throughout the Nation, who hear and review appeals on claims for earnings credits, monthly benefits, and lump sum payments under programs administered by that bureau. For procedure see 20 CFR pt. 422, subpt. B, Office of the Appeals Council, secs. 422.6, 422.7 incorporating pt. 403 regulations also (1957 Supp.).

staff of experienced hearings examiners, to review final recommendations of the individual examiners seems the most promising type of separate agency authority for adjudication on licensing applications to the AEC for the civilian operation of utilization and production facilities for nuclear materials. Policy, however, should be integrated and reconciled with Commission policies generally throughout the AEC, and, therefore, policymaking, i. e., rulemaking and general policy determinations in all fields, should for the time being be retained in the AEC under this theory of separation. The independence of the adjudicatory function can be achieved primarily by giving the Appeals Council sufficient prestige and operating status in the Commission staff hierarchy, together with a final adjudicatory authority, subject only to judicial review by the regular constitutional courts. A statutory grant of authority along the lines of the authority now issued in the Department of Health, Education, and Welfare, by the Appeals Council of the Social Security Administration, together with a salary standard at least at the level of Assistant General Manager after Presidential appointment with the advice and consent of the Senate, would seem to be required. The Report of the Committee on Administrative Management in 1937 suggested this type of separation for the regulatory agencies' judicial functions from their administrative and rulemaking functions.[52]

Appendix 17

Bibliography of Pertinent Atomic Energy Materials

1. The Atomic Energy Act of 1954, Public Law 703, 83d Congress, 2d Session, 68 Stat. 919 (1954), 42 U. S. C. A. §§ 2011–281 (Supp. 1954), as amended. See recent Joint Committee Print entitled "*Atomic Energy Legislation through 84th Congress*" which incorporates and itemizes all amendments to the Act since 1946.
2. Legislative History of the Atomic Energy Act of 1954 (3 vol., AEC, GPO, 1955).
3. Atomic Energy Commission regulations 10 CFR Parts 1, 2, 4, 7, 9, 20, 25, 30, 40, 50, 55, 60 and 70.
4. *Hearings Before the Joint Committee on Atomic Energy on the Development, Growth and State of the Atomic Energy Industry*, 84th Cong., 2d Sess. (2 vol., 1956).
5. Cole, *The Meaning of the New Atomic Law*, Nucleonics, (January through April, 1955).

[52] For proposals for redistribution of the judicial functions in administrative regulatory tribunals see the Report of the Committee on Administrative Management to the President in 1937, at p. 41.

"Redistribution of Functions. The following proposal is put forward as a possible solution of the independent commission problem, present and future. Under this proposed plan the regulatory agency would be set up, not in a governmental vacuum outside the executive departments, but within a department. There it would be divided into an administrative section and a judicial section. The administrative section would be a regular bureau or division in the department, headed by a chief with career tenure and staffed under civil-service regulations. It would be directly responsible to the Secretary and through him to the President. The judicial section, on the other hand, would be 'in' the Department only for purposes of 'administrative housekeeping' such as the budget, general personnel administration, and materiel. It would be wholly independent of the department and the President with respect to its work and its decisions. Its members would be appointed by the President with the approval of the Senate for long staggered terms and would be removable only for causes stated in the statute."

This provides an interesting analogy by substituting the word "Commission" for "Secretary". Detailed provisions for separation of functions are found in pp. 229–234 of the report.

6. Marks and Trowbridge, FRAMEWORK FOR ATOMIC INDUSTRY (1955).
7. Palfrey, *Atomic Energy: A New Experient in Government-Industry Relations*, 56 Col. L. Rev. 367 (1956).
8. Dean, REPORT ON THE ATOM (1954).
9. Northrop, *The Changing Role of the Atomic Energy Commission in Atomic Power Development*, 21 L. & C. P. 14 (1956).
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11. Upton, *Licensing and Services to Licensees and Others Under The Atomic Energy Act of 1954*, 24 Geo. Wash. L. R., 488 (1956).
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13. Trowbridge, *Licensing and Regulation of Private Atomic Energy Activities*, 34 Tex. L. R. 842 (1954).
14. Nelson, *Compliance with Atomic Energy Commission Regulations*, 34 Tex. L. R. 842 (1954).
15. Univ. Mich. Law School Summer Institute, *Report of Workshops on Legal Problems of Atomic Energy* (1956).
16. Atomic Industrial Forum, Inc., *Financial Protection Against Atomic Hazards* (Jan. 1957).
17. Atomic Industrial Forum, *Management, Economics and Technology for the Atomic Industry* (2 vol., 1956).
18. Plaine, *Atomic Energy—A New Body of Administrative Law* 24 Journal of Bar Assn. of D. C., 71, (Feb. 1957).
19. Atomic Energy Commission, *Twenty-first Semi-Annual Report* (Jan. 1957), esp. Part Two "Radiation Safety in Atomic Energy Activities."
20. Joint Committee Print, 84th Congress, 2d Session, *Report of the Panel on the Impact of the Peaceful Uses of Atomic Energy* (January 1956, 2 vol.).

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